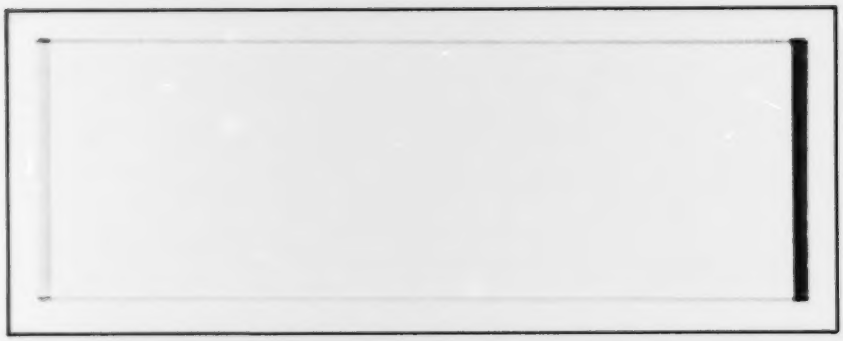
Agriculture
Canada



WORKING PAPER

Marketing and Economics Branch

Direction générale de la commercialisation
et de l'économie

Working papers are (1) interim reports completed by the staff of the Marketing & Economics Branch, and (2) research reports completed under contract. The former reports have received limited review, and are circulated for discussion and comment. Views expressed in these papers are those of the author(s) and do not necessarily represent those of Agriculture Canada.

STRUCTURAL CHANGE IN THE CANADIAN DAIRY FARM SECTOR*

(Working Paper 7/86)

Ralph E. Cotterill

April 1986

*The study was completed under contract. The views expressed in this paper are those of the author and do not necessarily represent the position of Agriculture Canada.

TABLE OF CONTENTS

		Page
1.0	Introduction	1
2.0	Dairy Industry Structural Change from 1966 to 1981	2
2.1	Net Changes - Introduction	3
2.2	Evolution of Dairy Farms by Herd Size and Farm Type	6
	2.2.1 Atlantic Provinces	12
	2.2.2 Central Canada	13
	2.2.3 Western Canada	21
	2.2.4 Summary	26
2.3	Historical Probabilities of Dairy Farm Adjustment	29
	2.3.1 Probability of Continuing Farming	31
	2.3.2 Probability of Entrance	32
	2.3.3 Probability of Exit	35
	2.3.4 Probability of Changing Herd Size	39
2.4	Evolution of Dairy Farms by Farm Type	41
	2.4.1 Provincial Details	44
	2.4.2 Adjustment by Herd Size	48
2.5	Resource Use Patterns	52
	2.5.1 Provincial Analysis	58
2.6	Age Characteristics of Dairy Farm Operators	62
2.7	Resource Adjustments by Former Dairy Farmers	70
	2.7.1 Provincial Analysis	71
3.0	Opportunities for Adjustment out of Dairy	75

1.0 INTRODUCTION

The objective of this report is to summarize and analyze major changes in the Canadian dairy farm sector from 1966 to 1981 following the approach taken by F.L. Tung and D. McClatchy in their article "Structural Adjustment in the Quebec Dairy Farm Sector", 1971-1976 (Canadian Farm Economics, Vol. 15, No. 1). It employs national and provincial data from Statistics Canada's Agriculture Census Match project for the periods 1966-71, 1971-76 and 1976-81. Data are examined according to dairy herd size and farm product type.

The report reviews the dairy sector during each of the four census years which form the beginning and ending points of the three match periods. These "snapshots" should provide the reader with an introduction to the more complex "flows" which are revealed by the matching process.

Because of the large volume of data generated in the course of examining eleven geographic areas over three time periods, most provincial tables are contained in three statistical appendices.[1] It should also be noted that Statistics Canada used random rounding in producing the match data. As a result some totals may be off by a small amount and some small cells may be empty because the few farms with these particular characteristics disappeared in the rounding process.

Future adjustment opportunities to non-dairy farming and to off-farm employment also are explored in light of total supply and resource mobility conditions.

---

[1] Structural Change in the Canadian Dairy Farm Sector, Part I, Structural Change in the Canadian Dairy Farm Sector, Part II, Regional Adjustments Within Quebec, and Structural Change in the Canadian Dairy Farm Sector, Part III, Regional Adjustment Within Ontario. These appendices are available upon request.

2.0 DAIRY INDUSTRY STRUCTURAL CHANGE FROM 1966 TO 1981

The 1966 Census of Agriculture recorded 174 190 farms in Canada with 3 or more dairy cows out of a total of 429 740 census farms - i.e., just over 40 percent of all census farms had enough dairy cows to suggest some sales of dairy products. By the 1981 Census there were only 53 805 farms with 3 or more cows, just 31 percent of the 1966 number. Futhermore, these farms accounted for only 17 percent of all 1981 census farms. Thus both in absolute and relative terms the 1966-81 period saw an enormous decline in numbers of farms which could have been producing saleable volumes of milk or cream.

This decline in dairy-farm[2] numbers becomes more dramatic if one compares it to the changing numbers of non-dairy farms over the same period. In 1966 there were 255 550 Census farms with 0, 1 or 2 dairy cows. By 1981 this figure stood at 263 945, an increase of 3 percent. In other words while dairy-farm numbers were dropping sharply, numbers of non-dairy farms actually increased slightly.

These net changes in numbers of farms mask the reality of the structural change processes which have been at work. Large numbers of farmers left agriculture entirely; others started farming during the period including some who joined the rapidly shrinking dairy sector. Still others stayed but switched from one type of enterprise to another including into and out of dairy farming. Finally, many farmers remained within the dairy sector but expanded or contracted their operations during the period. This section explores these changes with a view to looking at their implications for the future of the dairy sector.

---

[2] A farm with enough cows to be selling some milk or cream.

2.1 Net Changes - Introduction

The structure of the farm sector is constantly changing as a result of entrepreneurial decisions to enter, leave, expand and change enterprise and unplanned events such as death and incapacity. It is important to examine these underlying flows in order to understand the reasons for structural change. Before exploring these patterns, however, it is useful to take an introductory look at the net results as depicted by the four Censuses of Agriculture from 1966 to 1981.

The number of census farms in Canada declined steadily from approximately 430 000 in 1966 to 318 000 in 1981 (Table 1). If farms with two or fewer dairy cows can be classified as having no dairy enterprise the number of these "non-dairy" farms actually increased slightly during the period. The decline in the number of farms classed as "dairy" (i.e., farms with 3 or more cows) exceeded the

TABLE 1: CANADA-FARMS[1] WITH/WITHOUT DAIRY ENTERPRISES

	1966		1971		1976		1981	
	Number	%	Number	%	Number	%	Number	%
NON-DAIRY	255 550	59.5	254 260	69.6	266,335	78.8	263 945	83.1
DAIRY								
3-17 cows	121 470	28.3	60 550	16.6	26,700	7.9	15 235	4.8
18-47 cows	48 545	11.3	44 065	12.1	34 930	10.3	28 205	8.9
48-92 cows	3 860	.9	5 905	1.6	8 785	2.6	8 955	2.8
93+ cows	315	.1	550	.2	1 025	.3	1 410	.4
TOTAL DAIRY	174 190	40.5	111 070	30.4	71 440	21.2	53 805	16.9
TOTAL FARMS	429 740	100.0	365 330	100.0	337 775	100.0	317 750	100.0

[1]Includes farms with sales of $50 or more in 1966, 1971 and 1976 and sales of $250 or more in 1981.

decline in the total number of farms: total farm numbers decreased by 112 000 from 1966 to 1981 while dairy farm numbers fell by 120 000. As these numbers suggest, the proportion of all farms with any dairy enterprise also declined: from 40 percent in 1966; to 30 percent in 1981; 21 percent in 1976 and 17 percent in 1981.

Table 1 provides a breakdown of dairy-farm numbers by herd size. In the smallest category (3-17 cows) farm numbers declined by approximately one-half every five years from 1966 to 1981. In 1966 these farms comprised 28 percent of all farms and 70 percent of all dairy farms. By 1981 their numbers had fallen to five percent of all farms and 28 percent of all dairy farms. In the 18-47 cow category (mainly herds operated by the farmer without full-time hired labour) farm numbers also declined significantly. The 28 000 farms of this size in 1981 represented a 42 percent decrease from the 1966 count (over 48 000).

The numbers of farms with large herds (48-92 cows) and very large herds (93 or more cows) experienced rapid relative increases through the 15 year period, but the actual numerical increases (5 100 and 1,100 respectively) were not spectacular. In relative terms these classes made up 17 and 3 percent of 1981 dairy farms, a substantially smaller share than either the small or medium-sized operations.

The evolution of the agriculture and dairy farm sectors can also be examined from the vantage point of Statistics Canada's farm product type classification. Census farms with sales of $2,500 or more are classified according to their major source of sales revenue. By this definition dairy farms sell a minimum of $2,500 of agricultural products of which 51 percent or more consists of dairy products.

TABLE 2: CANADA - FARM[1] NUMBERS BY FARM PRODUCT TYPE

	1966		1971		1976		1981	
	Number	%	Number	%	Number	%	Number	%
Dairy	56 460	20.4	55 345	21.4	47 925	17.9	41 860	15.4
Cattle, hogs and sheep	70 935	25.6	89 605	34.7	67 870	25.3	78 175	28.8
Poultry	6 300	2.3	5 615	2.2	4 330	1.6	5 420	2.0
Wheat	71 410	25.8	33 645	13.0	61 075	22.8	55 765	20.6
Small Grains	29 740	10.7	36 200	14.0	50 275	18.8	51 775	19.1
Other field crops	9 795	3.5	8 800	3.4	5 165	1.9	7 980	2.9
Fruits & vegetables	7 490	2.7	7 825	3.0	8 275	3.1	10 245	3.8
Mixed livestock	13 220	4.8	8 020	3.1	11 310	4.2	9 380	3.5
Mixed crops	3 035	1.1	4 705	1.8	1 005	0.4	585	0.2
Misc. specialty	3 935	1.4	4 355	1.7	5 500	2.0	5 360	2.0
Other mixed	4 500	1.6	4 145	1.6	5 385	2.0	4 485	1.7
TOTAL	276 830	100.0	258 255	100.0	268 115	100.0	271 070	100.0

[1]Includes farms with annual sales of $2500 or more.

Source: Statistics Canada - Agriculture Census Match.

The number of these farms across Canada declined from 56,460 in 1966 to 41,860 in 1981 or from 20 to 15 percent of farms with sales of $2,500 or more. Thus the decline in numbers of specialized dairy farms was much less pronounced than in farms with any dairy enterprise. In 1966 dairy farms as defined by product type accounted for 32 percent of all farms with 3 or more dairy cows. By 1981 this ratio had risen to 78 percent. This indicates a growing tendency for farms with dairy herds to be specialized dairy farms as opposed to mixed farms with a dairy enterprise.

2.2 Evolution of Dairy Farms by Herd Size and Farm Type

This section examines in detail the changes in dairy farms from 1966 to 1981. First, the national picture is presented. Then the Atlantic Provinces, Central Canada (Quebec and Ontario) and Western Canada. Tables 3, 4, and 5 trace the movement during the three inter-censal periods, 1966-71, 1971-76, and 1976-81.

1966-1971

From 1966 to 1971, 104 050 non-dairy farms had exited, while 151 495 were still in business. Of this latter group 8375 reported at least 3 dairy cows in 1971, thus changing from non-dairy to dairy status.

Of 174 190 dairy farms in 1966, 48 300 had disappeared by 1971. 40 340 had dropped below 3 cows and were classed as non-dairy while 85 540 continued to have dairy enterprises. Finally 87 950 "new farms" were established between 1966 and 1971 of which 70 785 were non-dairy and 17 165 were dairy farms.

The establishment of a new census farm during an inter-censal period means that the operator of the new farm was not recorded as a farm operator during the previous census. Such occurrences may represent farms being transferred as on-going businesses with relatively little immediate change in the farm resource configuration (e.g. to family members who had been involved in the farm operation prior to the transition). On the other hand, the farm real estate may have been sold to someone at arm's length and the other farm capital (machinery, livestock, etc.) dispersed in separate transactions so that the new farm operator starts out with quite a different combination of resources.

The net adjustment from 174 190 dairy farms in 1966 to 111 075 in 1971 involves the following gross flows during the 5-year interval:

(i) 85 540 dairy farms continued to be dairy farms;

(ii) 48 300 dairy farms went out of business;

(iii) 40 340 dairy farms dropped their dairy enterprise but continued as some other kind of farm;

(iv) 8 375 non-dairy farms initiated a dairy enterprise; and

(v) 17 165 previously non-existent farms were established with dairy enterprises.

Of the 85 540 on-going dairy farmers during 1966-71, 21 percent shifted to a larger or smaller herd-size category during the period while the other 79 percent remained in the same class. Details are shown on Table 3.

1971-1976

During the 1971-76 period dairy farm numbers declined from 111 070 to 71 440, a net disappearance of 39 630 farms. The following underlying flows took place as shown on Table 4:

(i) 53 005 dairy farms continued to be dairy farms throughout the period;

(ii) 30 410 dairy farms went out of business;

(iii) 27 645 dairy farms dropped their dairy enterprises but continued as some other kind of farm;

(iv) 5 170 non-dairy farms initiated a dairy enterprise; and

(v) 13 260 previously non-existent farms were established with dairy enterprises.

1976-1981

During the 1976-81 period dairy farm numbers declined from 71 440 to 53 805 with the following flows as shown on Table 5:

(i) 40 875 dairy farms continued as such;

(ii) 13 330 went out of business;

(iii) 17 225 continued to operate but dropped the dairy enterprise;

(iv) 6 145 new dairy enterprises were established on previously non-dairy farms; and

(v) 6 785 new farms with dairy enterprises were established.

TABLE 3: CANADA - MOVEMENT OF FARM OPERATORS BY DAIRY HERD SIZE FROM 1966 to 1971

1966 FARM NUMBERS BY DAIRY HERD SIZE		1966 FARMS EXITING DURING 1966-1971	1966 FARMS CONTINUING THROUGH 1966-71	1971 FARM NUMBERS BY DAIRY HERD SIZE					
				NON-DAIRY	3-17 cows	18-47 cows	48-92 cows	93+ cows	Total Dairy
NON-DAIRY	255,550	104 050	151 495	143 120	6 660	1 475	205	35	8 375
DAIRY									
3-17	121 470	36 120	85 350	34 610	40 740	9 815	175	10	50 740
18-47	48 545	11 140	37 400	5 355	3 890	25 300	2 805	50	32 045
48-92	3 860	960	2 900	340	75	655	1 615	215	2 560
93+	315	80	230	35	5	15	60	115	195
TOTAL DAIRY	174 190	48 300	125 880	40 340	44 710	35 785	4 655	390	85 540
TOTAL FARMS	429 740	152 350	277 375	183 460	51 370	37 260	4 860	425	93 915
NEW ENTRANTS DURING 1966-71			87 950	70 785	9 185	6 805	1 045	130	17 165
1971 NUMBERS			365 335	254 260	60 550	44 065	5 910	550	111 075

Source: Statistics Canada - Agriculture Census Match.

TABLE 4: CANADA - MOVEMENT OF FARM OPERATORS BY DAIRY HERD SIZE FROM 1971 to 1976

1971 FARM NUMBERS BY DAIRY HERD SIZE		1971 FARMS EXITING DURING 1971-1976	1971 FARMS CONTINUING THROUGH 1971-76	1976 FARM NUMBERS BY DAIRY HERD SIZE					
				NON-DAIRY	3-17 cows	18-47 cows	48-92 cows	93+ cows	Total Dairy
NON-DAIRY	254 260	99 510	154 755	149 585	3 565	1 290	275	40	5 170
DAIRY									
3-17	60 550	18 215	42 335	21 765	15 910	4 495	160	5	20 570
18-47	44 065	10 715	33 340	5 245	2 320	21 960	3 715	100	28 095
48-92	5 905	1 355	4 560	550	70	805	2 730	405	4 010
93+	550	125	415	85	5	15	75	235	330
TOTAL DAIRY	111 070	30 410	80 650	27 645	18 305	27 275	6 680	745	53 005
TOTAL FARMS	365 330	129 920	235 405	177 230	21 870	28 565	6 955	785	58 175
NEW ENTRANTS DURING 1971-76			102 365	89 105	4 830	6 375	1 825	230	13 260
1976 NUMBERS			337 785	266 340	26 700	34 935	8 785	1 025	71 445

Source: Statistics Canada - Agriculture Census Match.

TABLE 5: CANADA - MOVEMENT OF FARM OPERATORS BY DAIRY HERD SIZE FROM 1976 to 1981

1976 FARM NUMBERS BY DAIRY HERD SIZE		1976 FARMS EXITING DURING 1976-1981	1976 FARMS CONTINUING THROUGH 1976-81	1976 FARM NUMBERS BY DAIRY HERD SIZE					
				NON-DAIRY	3-17 cows	18-47 cows	48-92 cows	93+ cows	Total Dairy
NON-DAIRY	266 335	86 975	179 345	173 200	3 730	1 705	525	185	6 145
DAIRY									
3-17	26 700	6 260	20 440	11 220	7 465	1 630	110	15	9 220
18-47	34 930	5 745	29 185	4 980	1 645	20 100	2 385	75	24 205
48-92	8 785	1 180	7 600	915	80	1 710	4 475	420	6 685
93+	1 025	145	875	110	10	20	220	515	765
TOTAL DAIRY	71 440	13 330	58 100	17 225	9 200	23 460	7 190	1 025	40 875
TOTAL FARMS	337 775	100 305	237 445	190 425	12 930	25 165	7 715	1 210	47 020
NEW ENTRANTS DURING 1976-81			80 300	73 515	2 300	3 040	1 235	210	6 785
1981 NUMBERS			317 750	263 945	15 235	28 205	8 955	1 410	53 805

Source: Statistics Canada - Agriculture Census Match.

From 1966 to 1971, 50 740 farms with 3-17 cows in 1966 maintained a dairy enterprise through the period. Of that total, 40 740 still had 3-17 cow herds in 1971. The remaining 10,000 increased their herds by one, two, or three size classes. During the same period, 32 045 operators with 18-47 cow herds in 1966 still had dairy enterprises in 1971. Of these, 25 300 ended the period with herds in the same size class, 3 890 dropped back into the smallest class and 2 855 expanded their herds.

2.2.1 Atlantic Provinces

In the Atlantic region, Newfoundland experienced the sharpest decline (61 percent) in non-dairy farm numbers from 1966 to 1981 and a similar decline (64 percent) in dairy farm numbers (Table 6). In the other three Atlantic provinces the decreases in non-dairy farm numbers ranged from 14 to 31 percent while the drop in dairy farm numbers was somewhat greater than in Newfoundland (Tables 7, 8 and 9). Although the regional dairy sector was contracting sharply throughout the period, the rate of decline was slowing down and the proportion of dairy operators who had stayed in business through the previous five years had started to increase slightly by 1981 after falling from 1966-71 to 1971-76.

The exit patterns of those Atlantic operators giving up their dairy enterprises appeared to be changing over the 15-year period under review. During 1966-71, the number of dairy operators in all provinces who ceased farming entirely was substantially higher than the number who gave up dairy but maintained some other farm enterprise. During 1971-76 "complete" exits exceeded "dairy exits" in all provinces, however the relative margin was fairly small in Prince Edward Island, Nova Scotia and New Brunswick. By 1976-81 dairy exits exceeded complete exits in Prince Edward Island and Nova Scotia.

The majority of new dairy farmers in all Atlantic provinces in each of the time periods were individuals who had not farmed at all prior to becoming dairy farmers; individuals with previous farming experience usually made up only one-third or fewer of new dairy farmers. The significant exceptions occurred during 1966-71 and 1976-81 in Nova Scotia when approximately 40 percent of new dairy farmers had previously operated non-dairy farms.

2.2.2 Central Canada

In Ouebec, farms with dairy enterprises declined from 72 percent to 44 percent of census farms during 1966-81 and from 42 to 19 percent of Ontario farms over the same period (tables 10 and 11). In both provinces the proportion of dairy farms which continued as dairy farms to the next census increased steadily through the 15 year period. By 1976 over 60 percent of all such farms would survive until 1981. By comparison, only 30 percent of 1966 Ouebec dairy farms and 49 percent of 1966 Ontario dairy farms still had dairy enteprises in 1971.

In both Ouebec and Ontario most farmers who gave up dairy enterprises during 1966-81 also went out of farming entirely. As the period progressed, however, the proportion of those leaving dairy who stayed farming was increasing. By 1976-81 the number of Ontario dairy operators who abandoned their dairy enterprises but continued to farm substantially exceeded the number who left agriculture altogether (4645 vs. 3390).

In both Quebec and Ontario most new dairy farmers during 1966-81 had not switched from other farm enterprises but rather had no previous experience as farm operators before entering the dairy business. Actual proportions varied over time but this tendency was continuously more pronounced in Quebec than in Ontario.

TABLE 6: NEWFOUNDLAND - MAJOR FARM ADJUSTMENT PATTERNS

	1966	1971	1976	1981
		(numbers)		
Total Farms	1 705	1 020	845	655
Non-Dairy Farms[1]	1 510	885	760	585
Dairy Farms[2]	195	135	85	70
Dairy Farms continuing through past 5 years	N/A	60	25	45
Dairy Farms disappearing in past 5 years	N/A	105	70	35
Dairy Farms switching to non-dairy in past 5 years	N/A	35	35	20
Non-Dairy Farms switching to dairy in past 5 years	N/A	30	20	10
New Farms with dairy enterprise in past 5 years	N/A	45	35	20

[1]Farms with 2 or fewer dairy cows.
[2]Farms with 3 or more dairy cows.

Source: Statistics Canada - Agriculture Census Match.

TABLE 7: PRINCE EDWARD ISLAND - MAJOR FARM ADJUSTMENT PATTERNS

	1966	1971	1976	1981
		(numbers)		
Total Farms	6 350	4 535	3 665	3 145
Non-Dairy Farms[1]	2 485	2 190	2 230	2 140
Dairy Farms[2]	3 865	2 345	1 435	1 000
Dairy Farms continuing through past 5 years	N/A	1 950	1 165	820
Dairy Farms disappearing in past 5 years	N/A	1 140	620	275
Dairy Farms switching to non-dairy in past 5 years	N/A	785	555	335
Non-Dairy Farms switching to dairy in past 5 years	N/A	120	90	50
New Farms with dairy enterprise in past 5 years	N/A	280	185	120

[1]Farms with 2 or fewer dairy cows.
[2]Farms with 3 or more dairy cows.

Source: Statistics Canada - Agriculture Census Match.

TABLE 8: NOVA SCOTIA - MAJOR FARM ADJUSTMENT PATTERNS

	1966	1971	1976	1981
		(numbers)		
Total Farms	9 595	5 980	5 415	5 025
Non-Dairy Farms[1]	5 625	3 935	4 145	4 030
Dairy Farms[2]	3 970	2 045	1 270	995
Dairy Farms continuing through past 5 years	N/A	1 545	870	715
Dairy Farms disappearing in past 5 years	N/A	1 550	660	270
Dairy Farms switching to non-dairy in past 5 years	N/A	865	505	290
Non-Dairy Farms switching to dairy in past 5 years	N/A	205	125	110
New Farms with dairy enterprise in past 5 years	N/A	295	270	175

[1]Farms with 2 or fewer dairy cows.
[2]Farms with 3 or more dairy cows.

Source: Statistics Canada - Agriculture Census Match.

TABLE 9: NEW BRUNSWICK - MAJOR FARM ADJUSTMENT PATTERNS

	1966	1971	1976	1981
		(numbers)		
Total Farms	8 690	5 460	4 530	4 055
Non-Dairy Farms1	4 430	3 290	3 225	3 075
Dairy Farms2	4 260	2 170	1 305	980
Dairy Farms continuing through past 5 years	N/A	1 710	955	695
Dairy Farms disappearing in past 5 years	N/A	1 610	715	345
Dairy Farms switching to non-dairy in past 5 years	N/A	915	505	275
Non-Dairy Farms switching to dairy in past 5 years	N/A	165	95	105
New Farms with dairy enterprise in past 5 years	N/A	285	245	190

[1]Farms with 2 or fewer dairy cows.
[2]Farms with 3 or more dairy cows.

Source: Statistics Canada - Agriculture Census Match.

In both provinces the number of new dairy enterprises established was typically no more than one-third the number of dairy enterprises terminated in each 5-year interval. Ontario new dairy starts exceeded this one-third replacement rate only slightly during 1976-81.

TABLE 10. OUEBEC - MAJOR FARM ADJUSTMENT PATTERNS

	1966	1971	1976	1981
		(numbers)		
Total farms	80 140	61 155	51 505	48 090
Non-dairy farms[1]	22 295	21 640	23 960	27 020
Dairy farms[2]	57 845	29 515	27 545	21 070
Dairy farms continuing through past 5 years	N/A	32 605	21 545	17 885
Dairy farms disappearing in past 5 years	N/A	17 440	12 340	5 780
Dairy farms switching to non-dairy in past 5 years	N/A	7 785	5 640	3 875
Non-dairy farms switching to dairy in past 5 years	N/A	1 230	885	700
New farms with dairy enterprise in past 5 years	N/A	5 695	5 105	2 475

[1]Farms with 2 or fewer dairy cows.
[2]Farms with 3 or more dairy cows.

Source: Statistics Canada, Agriculture Census Match

TABLE 11. ONTARIO - MAJOR FARM ADJUSTMENT PATTERNS

	1966	1971	1976	1981
		(numbers)		
Total farms	109 805	94 640	88 715	82 385
Non-dairy farms[1]	63 980	64 120	68 280	67 030
Dairy farms[2]	45 825	30 520	20 435	15 355
Dairy farms continuing through past 5 years	N/A	22 475	15 440	12 395
Dairy farms disappearing in past 5 years	N/A	13 870	7 985	3 390
Dairy farms switching to non-dairy in past 5 years	N/A	9 565	7 090	4 645
Non-dairy farms switching to dairy in past 5 years	N/A	2 185	1 290	1 210
New farms with dairy enterprise in past 5 years	N/A	5 830	3 705	1 755

[1]Farms with 2 or fewer dairy cows.
[2]Farms with 3 or more dairy cows.

Source: Statistics Canada, Agriculture Census Match

2.2.3 Western Canada

Dairy farm adjustments are summarized for Western Canada in tables 12-15. Alberta had 5 305 dairy farms in 1981, down 76 percent from the 1966 number. Manitoba and Saskatchewan numbers each declined 78 percent over the period. The proportion of dairy farmers still in the dairy business at the end of each period was smallest in Saskatchewan and largest in Manitoba; in all provinces this proportion was lowest during 1971-76.

The entry path for new dairy farmers on the Prairies was somewhat different from the national picture which saw most new dairy operators enter dairy from the outside rather from non-dairy farming. This conventional pattern did exist in Manitoba and Alberta during 1966-71 and 1971-76 although it was weaker than the national tendency. During 1976-81 in these two provinces and in each time period in Saskatchewan, non-dairy farmers switching to dairy exceeded new farms with dairy enterprises, sometimes by a ratio of 2:1 or more.

British Columbia dairy farms numbered 1 770 in 1981; this was 54 percent of the 1966 number, giving British Columbia the slowest decline of any province. During 1976-81 slightly more B.C. dairy farmers switched to non-dairy farming than abandoned farming altogether; in the previous 10 years most farmers who were giving up dairy also gave up farming completely. Most new dairy farmers had no previous farm-operator experience although the spread between the two groups narrowed during 1976-81.

During 1976-81, the replacement rate for B.C. dairy farmers was 80 percent: 930 operators left the dairy business while 740 came in. The Ouebec and Ontario replacement rates for the same period were 33 and 37 percent respectively compared to a national rate of 42 percent.

TABLE 12. MANITOBA - MAJOR FARM ADJUSTMENT PATTERNS

	1966	1971	1976	1981
		(numbers)		
Total farms	39 705	34 940	32 045	29 410
Non-dairy farms[1]	25 175	26 640	27 275	26 190
Dairy farms[2]	14 530	8 300	4 770	3 220
Dairy farms continuing through past 5 years	N/A	6 490	3 335	2 185
Dairy farms disappearing in past 5 years	N/A	3 095	2 100	910
Dairy farms switching to non-dairy in past 5 years	N/A	4 930	2 865	1 680
Non-dairy farms switching to dairy in past 5 years	N/A	855	525	655
New farms with dairy enterprise in past 5 years	N/A	955	895	390

[1]Farms with 2 or fewer dairy cows.
[2]Farms with 3 or more dairy cows.

Source: Statistics Canada, Agriculture Census Match

TABLE 13. SASKATCHEWAN - MAJOR FARM ADJUSTMENT PATTERNS

	1966	1971	1976	1981
		(numbers)		
Total farms	85 425	76 700	70 680	67 080
Non-dairy farms[1]	66 840	65 695	65 445	63 050
Dairy farms[2]	18 585	11 005	5 235	4 030
Dairy farms continuing through past 5 years	N/A	7 755	3 555	2 035
Dairy farms disappearing in past 5 years	N/A	3 695	2 235	730
Dairy farms switching to non-dairy in past 5 years	N/A	7 145	5 200	2 460
Non-dairy farms switching to dairy in past 5 years	N/A	1 830	890	1 500
New farms with dairy enterprise in past 5 years	N/A	1 405	775	490

[1]Farms with 2 or fewer dairy cows.
[2]Farms with 3 or more dairy cows.

Source: Statistics Canada, Agriculture Census Match

TABLE 14. ALBERTA - MAJOR FARM ADJUSTMENT PATTERNS

	1966	1971	1976	1981
		(numbers)		
Total farms	69 250	62 520	60 950	57 935
Non-dairy farms[1]	47 445	49 885	53 565	52 630
Dairy farms[2]	21 805	12 635	7 385	5 305
Dairy farms continuing through past 5 years	N/A	9 435	4 980	3 065
Dairy farms disappearing in past 5 years	N/A	4 810	2 905	1 145
Dairy farms switching to non-dairy in past 5 years	N/A	7 545	4 755	3 160
Non-dairy farms switching to dairy in past 5 years	N/A	1 465	980	1 480
New farms with dairy enterprise in past 5 years	N/A	1 735	1 430	740

[1]Farms with 2 or fewer dairy cows.
[2]Farms with 3 or more dairy cows.

Source: Statistics Canada, Agriculture Census Match

TABLE 15. BRITISH COLUMBIA - MAJOR FARM ADJUSTMENT PATTERNS

	1966	1971	1976	1981
		(numbers)		
Total farms	19 065	18 370	19 390	19 965
Non-dairy farms[1]	15 760	15 975	17 440	18 195
Dairy farms[2]	3 305	2 395	1 950	1 770
Dairy farms continuing through past 5 years	N/A	1 450	1 115	1 025
Dairy farms disappearing in past 5 years	N/A	1 090	795	455
Dairy farms switching to non-dairy in past 5 years	N/A	750	500	475
Non-dairy farms switching to dairy in past 5 years	N/A	315	250	310
New farms with dairy enterprise in past 5 years	N/A	640	600	430

[1]Farms with 2 or fewer dairy cows.
[2]Farms with 3 or more dairy cows.

Source: Statistics Canada, Agriculture Census Match

2.2.4 Summary

National patterns of structural change by on-going dairy operators were discussed briefly earlier in this section. About 20 percent of on-going dairy enterprises either expanded or contracted during the three 5-year periods from 1966 to 1981 as reflected by movements between the four herd-size classes being examined in this study.

Table 16 summarizes national and provincial movements of dairy farms to larger or smaller size herds during the three 5-year intervals under review. The columns labelled "Total On-going" give the number of dairy farms which were in existence at both the beginning and end of each period. The number of these operators who either expanded or contracted their herds enough to shift one or more size classes are also presented.

At the national level, for example, 15.3 percent of all on-going dairy farms moved to a larger herd-size class from 1966 to 1971. This proportion rose to 16.8 percent during 1971-76 then declined to 11.3 percent during 1976-81. Nova Scotia and British Columbia showed higher proportions of dairy farmers expanding herd size in each period; in the case of British Columbia the proportion was fairly constant at approximately 24 percent through the 15-year period. Quebec and Ontario exceeded the national rate of expansion using this measure during 1966-71 and 1971-76 but fell below during 1976-81.

The national proportion of on-going dairy farms which dropped to smaller size classes stood at 5.5 percent during 1966-71, 6.2 percent during 1971-76 and 9.0 percent during 1976-71. In Quebec these proportions were consistently below the national levels (4.8 to 7.4 percent) while in Ontario they exceeded the national levels (8.3 to 12.6 percent).

TABLE 16. CANADA AND PROVINCES, HERD SIZE CHANGES BY ON-GOING DAIRY FARMERS

	1966-71			1971-76			1976-81		
	Total On-going	Larger Herd	Smaller Herd	Total On-going	Larger Herd	Smaller Herd	Total On-going	Larger Herd	Smaller Herd
	(numbers)								
Newfoundland	60	15	5	25	5	-	45	15	5
Prince Edward Island	1 950	170	55	1 165	220	25	820	145	35
Nova Scotia	1 545	250	70	870	160	25	715	100	65
New Brunswick	1 710	200	85	955	135	65	695	95	60
Quebec	32 605	6 555	1 575	21 545	3 735	1 090	17 885	1 815	1 320
Ontario	22 475	3 550	1 870	15 440	2 775	1 345	12 395	1 190	1 560
Manitoba	6 490	650	345	3 335	510	160	2 185	300	185
Saskatchewan	7 755	315	175	3 555	325	135	2 035	225	110
Alberta	9 435	985	410	4 980	735	330	3 065	500	280
British Columbia	1 450	350	90	1 115	265	95	1 025	245	65
Canada[1]	85 540	13 070	4 700	53 005	8 880	3 290	40 875	4 635	3 685

[1]Discrepancies in Canada totals due to rounding.

Source: Statistics Canada, Agriculture Census Match.

The proportion of dairy farmers who either gave up their dairy enterprises or gave up farming entirely also varies with herd size. The proportions of dairy operators giving up dairy but remaining in agriculture from 1966 to 1981 according to their beginning herd size were;

No. of cows	1966-71	1971-76	1976-81
		percent	
3-17 cow herds	28.5	35.9	42.0
18-47 cow herds	11.0	11.9	14.3
48-92 cow herds	8.8	9.3	10.4
93 + cow herds	11.1	15.5	10.7
All dairy farms	23.2	24.9	24.1

Herd size is also a relevant consideration for new dairy farmers, whether they switched from the non-dairy classification or were not operating a farm at all at the previous census. Table 3 indicates that 6 660 operators out of 8 375 who switched from non-dairy to dairy farming during 1966-71 had 3-17 cows in 1971 while 1 475 had 18-47 cows, (79.5 and 17.6 percent respectively). Out of 17 165 new dairy operators during the same period who had not previously been farm operators, 9 185 (53.5 percent) had 3-17-cows in 1971 and 6 805 (39.6 percent) had 18-47 cows. Within both groups the 3-17 cow herd was the modal class for entering the dairy business but a substantially higher proportion of new dairy operators with no previous non-dairy farming experience started in the 18-47 cow class compared to those switching from non-dairy to dairy (39.6 percent vs. 17.6 percent). Similarly the proportion of "brand new" dairy farmers

starting with large or very large herds (43-92 or 93+ cows) during 1966-71 was 6.9 percent compared to 2.9 percent among those new dairy farmers who had previously been involved in non-dairy farming. This suggests that many new dairy farmers were taking over existing dairy operations rather than starting a new dairy farm from scratch.

2.3 Historical Probabilities of Dairy Farm Adjustment

The previous tables and text have described the numbers and proportions of farm operators who made various types of adjustment or farmed without major change during the three 5-year periods from 1966 to 1981. These proportions can be looked upon as probabilities of occurrence for each of these events and as such can provide a different perspective on dairy-sector adjustment.

Table 17, below, outlines the probabilities of "major" changes for all Canadian farms as well as the dairy and non-dairy sub-classes during 1966-81. Tables A-31 through A-40 in the statistical appendix present the same probabilities for each province.

TABLE 17. CANADA, HISTORICAL PROBABILITIES OF MAJOR FARM-LEVEL CHANGES

	1966-71	1971-76	1976-81
All farms			
Probability of continuing farming for next 5 years[1]	.645	.644	.703
Probability of giving up farming within next 5 years[2]	.355	.356	.297
Probability of having started farming within past 5 years[1]	.241	.303	.253
Non-dairy farms			
Probability of continuing farming for next 5 years[1]	.593	.609	.673
Probability of giving up farming within next 5 years[2]	.407	.391	.327
Probability of having started farming within past 5 years[3]	.278	.335	.279
Dairy farms			
Probability of continuing farming for next 5 years[1]	.723	.726	.813
Probability of giving up farming within next 5 years[2]	.277	.274	.187
Probability of having started farming within past 5 years[4]	.155	.186	.126

[1]Farming of any type.
[2]Farming of all types.
[3]Not farming at all at start of the period but engaged in non-dairy farming at end of period.
[4]Not farming at all at start of period but engaged in dairy farming at end of period.

Source: Statistics Canada, Agriculture Census Match.

2.3.1 Probability of Continuing Farming

In the case of both non-dairy and dairy farms across Canada the probability of any farm staying in business until the next census increased from 1966 to 1981. By 1976 there was a probability of .673 that a non-dairy farmer would still be in some kind of farm business five years later, up from .593 in 1966. For dairy farmers this likelihood of remaining in some type of farming was .813 in 1976, up from .723 in 1966. Dairy farmers thus had a higher probability of continuing farming than their non-dairy counterparts across the country.

The increase in farm viability over the 15-year period was likely due mainly to earlier high attrition among the marginal farm sector. Thus, the remaining farms were in general larger and more productive and had a greater chance to succeed, despite continuing economic pressures. The increasing incidence of part-time farming through the period would also have enhanced chances of survival.

Higher rates of dairy survival compared to non-dairy probably relate to a number of factors. More secure dairy income streams likely made small dairy farms less vulnerable than similar scale non-dairy farms. The transition out of dairy often reflects a decision that daily chores have become too burdensome for an older farmer but a less demanding work load (e.g. raising calves) still is feasible. The adjustment out of dairy often is a refinement of mixed farming activities which have been pursued for many years. The non-dairy farmer contemplating adjustment to a less demanding routine probably faces a narrower set of options and is therefore more likely to give up farming entirely.

In the Atlantic provinces both non-dairy and dairy farms were less likely to survive through the inter-censal periods than Canadian non-dairy and farmers as a whole. In all four provinces, however, dairy farmers' survival prospects exceeded those of non-dairy farmers by a wider margin than in Canada as a whole, due to relatively low survival rates for the non-dairy group.

Ouebec dairy farmers were also less likely to stay in farming than the national average over the fifteen year period. Ontario dairy farmers had the same probability of continuing farming as Quebec dairy farmers during 1966-71; thereafter, they surpassed both the Quebec and national probabilities.

Despite an increase in the probability of giving up farming from 1966-71 to 1971-76, the Prairie provinces exhibited the greatest likelihood of continuity for both dairy and non-dairy types of farms in each of the three 5-year periods. During 1976-81 the probability of continuing farming for dairy operators ranged from .810 in Manitoba to .843 in Alberta and .859 in Saskatchewan.

In British Columbia the probability of a dairy farm continuing as a farm rose steadily over the period but remained significantly below national levels. The likelihood of a non-dairy farm continuing through the period was also consistently below the national average.

2.3.2 Probability of Entrance

Tables 17 and A-31 to A-40 also give probabilities for any dairy or non-dairy farmer having started farming during the period. For the nation as a whole, this likelihood was much greater for non-dairy than for dairy farmers and for both groups was highest during the 1971-76 period. Among the provinces, British Columbia dairy farmers had the

second highest probability of having started farming throughout the 15-year period. At the time of the 1981 Census, for example, the probability of a B.C. dairy farmer being a new entrant was .243 compared to .126 for all of Canada and .114 for Ontario.

Newfoundland actually had the highest probability of dairy farmers being new entrants in each of the 5-year intervals. The rate of structural change within Newfoundland agriculture is undoubtedly quite high; however, Statistics Canada's random rounding procedure also may have affected the Newfoundland statistics because of the small numbers of farmers in the province.

The probability of a Canadian farmer having started dairy farming within the previous five years was, generally speaking, highest for 3-17 cow herds and lowest for 18-47 cow herds. Considering all those who started dairy farming, the probability that a farmer who had recently started dairy would also have just started farming (i.e. not previously have operated a non-dairy farm) was highest for those starting 48-92 cow herds.

Atlantic dairy farmers in 1981 were more likely to have started their dairy enterprises within the previous five years than Canadian dairy operators as a whole (Canada, .240; Newfoundland, .429; Nova Scotia, .286; New Brunswick, .301). The exception was Prince Edward Island operators who were less likely to be new entrants (.169). Maritime dairy operators during 1976-81 were also more likely to be new farmers than the overall Canadian probability during that period (Canada, .525; Prince Edward Island, .706; Nova Scotia, .614; New Brunswick, .644).

Ontario and Quebec dairy operators were less likely to have started their dairy enterprises within the previous 5 years than Canadian dairy farmers as a whole (e.g. during 1976-81: Canada, .240; Quebec, .151; Ontario, .193). Throughout the 15-year period new Quebec dairy operators were also more likely to be new farmers than for Canada as a whole. This was also the case in Ontario but the tendency there was less pronounced than in Quebec.

Manitoba, Saskatchewan and Alberta dairy operators were much more likely to have been in the dairy business less than 5 years than were Canadian dairy farmers as a whole (Canada, .240; Manitoba, .325; Saskatchewan, .494; Alberta, .418). New dairy operators in these provinces were, however, much less likely throughout the 15-year period to be starting farming than new Canadian dairy operators taken as a group (e.g. for 1976-81: Canada, .525; Manitoba, .373; Saskatchewan, .246; Alberta, .333).

British Columbia dairy farmers were similar to Prairie dairy farmers in that they were more likely to have recently entered the dairy business than was the case for all Canadian dairy farmers. They differed from their Prairie counterparts in that new dairy operators were more likely to have also started farming during the same period (e.g. during 1976-81: Canada, .525; British Columbia, .581).

The next set of probabilities deals with the likelihood of new dairy operators starting their dairy enterprises in the four herd size classes.

During 1976-81 the probabilities that new dairy operators across Canada would start in the four size classes were: 3-17 cows, .466; 18-47 cows, .367; 48-92 cows, .136; 93+ cows, .031.

Dairy farmers previously engaged in other type of farming typically started with a smaller herd, with a .607 probability of establishing small-sized herds (3-17 cow) in 1976-81. However, new farmers getting into the dairy businesss, had a probability of .661 for establishing medium or larger (more than 17 cows). This again reflects the tendency for many new farmers to take over an ongoing dairy operation.

2.3.3 Probability of Exit

The probabilities of various types of adjustment by Canadian dairy farmers classified according to herd size is outlined on Table 18 (Appendix tables A-41 to A-50 present parallel statistics for each province).

For the smallest herd-size class (3-17 cows) the probability of a farmer getting out of dairy production was close to two in three during 1971-81. This represented a marked increase from .582 during 1966-71. The probabilities of giving up dairying were lowest in the 48-92 cow class although reasonably constant in herds with 18 or more cows. For all herds with 18 or more cows the probability of giving up the dairy enterprise fell off sharply during 1976-81. Rapid increases in off-farm wages and farm input costs were recorded during 1971-76, and while these slackened only marginally during 1976-81, formula-based dairy pricing probably encouraged many operators to continue during the latter period.

In the 3-17 cow class, farmers giving up their dairy enterprises were less likely to give up farming entirely (i.e. more likely to switch to the non-dairy classification) than were dairy operators with larger herds. During 1976-81 there was a probability of .358 that a Canadian farmer giving up a small dairy enterprise would leave farming

TABLE 18. CANADA - HISTORICAL PROBABILITIES OF VARIOUS TYPES OF ADJUSTMENT BY DAIRY FARM OPERATOR AND BY HERD SIZE, 1966-71, 1971-76 AND 1976-81

	3-17 cows			18-47 cows			48-92 cows			93+ cows			All dairy farms		
	1966-71	1971-76	1976-81	1966-71	1971-76	1976-81	1966-71	1971-76	1976-81	1966-71	1971-76	1976-81	1966-71	1971-76	1976-81
1. Probability of giving up dairy enterprise in next five years	.582	.660	.655	.340	.362	.307	.337	.323	.238	.365	.382	.249	.509	.523	.428
2. Probability of giving up farming in next five years	.297	.301	.234	.229	.243	.164	.249	.229	.134	.254	.227	.141	.277	.274	.187
3. Probability of switching to non-dairy farming in next five years	.285	.359	.420	.110	.119	.143	.088	.093	.104	.111	.155	.107	.232	.249	.241
4. Probability that a farmer giving up a dairy enterprise will give up all farming in next five years	.511	.456	.358	.675	.673	.536	.738	.711	.563	.696	.595	.569	.545	.524	.436
5. Probability of moving to a larger herd size class in next five years	.082	.077	.066	.059	.087	.070	.056	.069	.048	N/A	N/A	N/A	N/A	N/A	N/A
6. Probability of moving to a smaller herd size class in next five years	N/A	N/A	N/A	.080	.053	.047	.189	.148	.204	.254	.173	.244	N/A	N/A	N/A
7. Probability of having moved from a smaller herd size class in past five years	N/A	N/A	N/A	.223	.129	.058	.504	.441	.279	.500	.498	.362	N/A	N/A	N/A
8. Probability of having moved from a larger herd size class in past five years	.066	.090	.114	.015	.023	.061	.010	.009	.025	N/A	N/A	N/A	N/A	N/A	N/A
9. Probability of having started dairy farming in past five years	.262	.314	.396	.188	.219	.168	.212	.239	.197	.300	.263	.280	.230	.258	.240
10. Probability of having switched from non-dairy to dairy farming in past five years	.110	.134	.245	.033	.037	.060	.035	.031	.059	.064	.039	.131	.075	.072	.114
11. Probability of having started farming in past five years	.152	.181	.151	.154	.182	.108	.177	.208	.138	.236	.224	.149	.155	.186	.126
12. Probability that a farmer who has started dairy will also have started farming in past five years	.580	.575	.381	.822	.832	.641	.836	.869	.702	.788	.852	.532	.672	.719	.525
13. Probability for all new dairy farmers of having started in a specific herd size class in past five years	.620	.456	.466	.324	.416	.367	.049	.114	.136	.006	.015	.031	N/A	N/A	N/A
14. Probability for non-dairy farmers who switched to dairy farming of having started in a specific herd size class in past five years	.795	.690	.607	.176	.250	.277	.024	.053	.085	.004	.008	.030	N/A	N/A	N/A
15. Probability for new farmers of having started dairy farming in a specific herd size class in past five years	.535	.364	.339	.396	.481	.448	.061	.138	.182	.008	.017	.031	N/A	N/A	N/A

Source: Statistics Canada, Agriculture Census Match.

completely. For the other herd size classes, this same probability rose to .536, to .545. Generally, the larger the herd size, the more likely an operator would leave agriculture if he were leaving the dairy business. The smaller herds are found on mixed farms with fewer resources that are specialized just for the dairy enterprise; if the dairy herd is dropped, many of the resources can be used in other enterprises. The larger herds tend to be associated with specialized dairy farms and less flexible resources and a decision to get out of dairy in favour of another enterprise would often require substantial resource adjustments.

In addition, for all herd sizes, the probability that a farmer giving up dairy would give up all farming declined steadily through the 15-year period. Taking all dairy farmers together this probability dropped from .545 during 1966-71 to .524 during 1971-76 to .436 during 1976-81. Attrition of marginal operators probably increased the average viability of the sector through the 15-year period.

Aggregating all herd sizes, Newfoundland, Nova Scotia and New Brunswick dairy farmers had higher probabilities of giving up their dairy enterprises than Canadian dairy operators as a whole. In Prince Edward Island these probabilities were slightly lower than the national levels. The probability of dairy operators giving up farming entirely was consistently higher in all four Atlantic provinces than the national level throughout the 15-year period.

The probability of Quebec dairy farmers giving up dairy declined from .436 during 1966-71 to .351 during 1976-81. In Ontario this probability fell from .509 to .393 over the same period. Throughout the period both provinces scored at or below national levels in this statistic. The Ontario probabilities exceeded those in Quebec for 3-17 and 18-42 cow herds during each intercensal period. For the large and very large herds, however, Quebec's probability of giving up dairy exceeded Ontario's during 1971-76 and 1976-81.

Ouebec dairy farmers giving up dairy were more likely to leave agriculture entirely than their Ontario counterparts or all Canadian dairy farmers taken together. By 1976-81 the probability that an exiting Ontario dairy farmer would leave agriculture completely had declined to .422 compared to .599 in Quebec and .436 in all of Canada. For both provinces the probability of a dairy farmer leaving agriculture as well as dairy increased with increasing herd size throughout the 15-year period under review.

Dairy farmers in Manitoba, Saskatchewan and Alberta were more likely to give up dairy than the average Canadian dairy farmer during each of 1966-71, 1971-76 and 1976-81. This probability spread ranged from 5 to more than 15 percentage points and was widest during 1976-81. At the same time their probability of giving up farming entirely was below the national level.

Small farm numbers make it difficult to identify trends in the Prairie provinces with respect to large and very large herds but operators with small and medium sized herds were much less likely to quit farming when they gave up their dairy enterprises than the Canadian average. In Alberta during 1976-81, for example this probability was .244 and .313 for operators of 3-17 and 18-47 cow herds respectively, compared to national probabilities at .358 and .536.

In British Columbia the probability of giving up a dairy enterprise exceeded the national level in each 5-year period. For 3-17 cow herds this B.C. figure averaged .777, 14 percentage points above the national figure. British Columbia dairy farmers were also more likely to give up farming completely than the average Canadian farmer over the 15-year period.

2.3.4 Probability of Changing Herd Size

Tables 18 and A-41 to A-50 also contain probabilities of changing herd size for each herd-size class and time period.

At the national level the probability of expanding one's herd was greatest (.082) during 1966-71 for operators with 3-17 cows. During 1971-76 and 1976-81 operators with 18-47-cow herds were most likely to expand (.087 and .070).

Operators of small herds in New Brunswick and Nova Scotia were less likely to move into larger herd classes than the national probability for all operators of small dairy herds. Prince Edward Island's small dairy farmers also had a low probability of expansion during 1966-71 (.045), but during 1971-76 this probability increased to .097 and by 1976-81 was up to .122, well above comparable national levels. In the 18-47 cow class the above pattern was reversed: Prince Edward Island dairy farmers were less likely to expand than the national average while New Brunswick and Nova Scotia operators were much more likely to do so.

Quebec operators of 3-17 cow herds were almost twice as likely to move to a larger herd size as Canadian operators of small herds overall. Ontario operators of small dairy enterprises were similar to the Canadian average. In the 18-47 cow class Quebec operators were somewhat less likely to expand than the Canadian average while Ontario operators were again similar to the Canadian average. In both provinces operators of large herds (48-92 cows) consistently demonstrated a lower probability of becoming very large than the national average.

Small-herd operators in the Prairie provinces were less likely to expand throughout the 15-year period than the national probabilities for expansion. In the 18-47 cow class Alberta operators were more likely to expand than the national averages for each of the 5-year periods; Saskatchewan and Manitoba operators exceeded the national probability only during 1976-81.

British Columbia operators of small herds were less likely to expand (e.g. .036 during 1976-81) than the national probability for this size class (.066). Operators of medium-sized herds, on the other hand, were at least twice as likely to expand as the national average. B.C. dairy farmers with 48-92 cow herds were also substantially more inclined to expand to very large herds than the average for all Canadian operators with herds of this size (e.g. .162 for B.C. vs. .048 for Canada during 1976-81); and the relative strength of this tendency in British Columbia increased over the 15-year period.

At the national level, the probability of moving to a smaller herd size increased through the herd-size classes. In the 18-47 cow class it declined steadily through the three 5-year periods; however in the large and very large classes it declined from the first to the second period but rose again during 1976-81. In the Atlantic region the probability of 18-47 cow herds moving to the 3-17 cow class was at or slightly above the national level and declined through the 15-year period, following the national trend. Ontario was slightly above the national trend in this size class while Quebec operators were less likely to decrease their herd sizes than the national average. In the 48-92 cow class both Quebec and Ontario dairy farmers were somewhat more likely to decrease their herds than the national average.

Prairie operators of 18-47 cow herds were substantially more likely, throughout the 15-year period, to move into the smallest size class than Canadian farmers as a whole. During 1976-81 dairy farmers with 48-92 cows were slightly less likely to move to a smaller size class than Canadian farmers as a whole. British Columbia dairy farmers in the 18-47, 48-92, and 93-or-more cow classes were substantially less likely to move into smaller herd classes than all Canadian farmers in these same classes. In addition this probability of reducing the herd size declined steadily through time in each size class.

2.4 Evolution of Dairy Farms by Farm Type

Tables 19 and A-51 to A-60 give the evolution of dairy-type farms (sales of $2500 or more, with half or more from dairy products) through each of the three five-year periods.

The proportion of Canadian dairy-type farms which persisted as such between the 1966 and 1971 censuses was just over 56 per cent (i.e. 56 percent of 1966 dairy-type farms were still producing more than $2500. of product in 1971 of which half or more was milk or other dairy products). Fifty-five percent of 1971 dairy-type farms continued with dairy as their main source of farm income through to 1976. During 1976-81, however, this ratio increased significantly as over 63 percent of dairy-type farms continued as such through the 5-year period.

TABLE 19: CANADA - END-OF-PERIOD STATUS OF FARMS WHICH WERE DAIRY-TYPE AT BEGINNING OF PERIOD

	1966-71		1971-76		1976-81	
	Number	Percent	Number	Percent	Number	Percent
Dairy	31 850	56.4	30 540	55.2	30 365	63.4
Cattle, Hogs, Sheep	3 920	6.9	3 100	5.6	4 260	8.9
Poultry	215	0.4	120	0.2	120	0.3
Wheat	65	0.1	255	0.5	200	0.4
Small Grains	385	0.7	1 450	2.6	1 265	2.6
Other Field Crops	190	0.3	130	0.2	185	0.4
Fruit and Vegetables	120	0.2	150	0.3	100	0.2
Misc Specialty	130	0.2	65	0.1	190	0.4
Mixed Livestock	485	0.9	945	1.7	335	0.7
Mixed Field Crops	90	0.2	35	0.1	25	0.1
Other Mixed	180	0.3	350	0.6	145	0.3
No Type or Not Farming	18 830	33.4	18 190	32.9	10 735	22.4
Total	56 460	100.0	55 330	100.0	47 925	100.0

Source: Statistics Canada, Agriculture Census Match.

Assuming constant rates of technological change and constant market pressures, rates and types of adjustment should be theoretically fairly stable through time. However, Table 19 suggests that dairy farmers were in fact responding to changes in the underlying social and economic forces over the 1966-1981 period.

In 1966, the dairy sector still showed many signs of its traditional base where success was possible on a small scale often associated with product differentiation (e.g. "Guernsey Gold" milk) and localized processing and marketing. By the early 1970's product uniformity was uppermost, margarine had taken a significant share of the butter market and local dairies had given way to large-scale centralized processing. Consumers had become more interested in price than in differentiated product. In addition manufactured milk quality

standards had been raised to fluid milk levels, often necessitating capital outlays for more modern milking and milk storage facilities. In the face of these developments many small-scale operators got out of dairying rather than try to keep abreast of the changes. Others took the opportunity to expand as the new technology was being adopted.

This technological pressure of the 1960's gave way to input price pressure in the 1970's. Energy and interest costs rose sharply as did off-farm wages. Although unemployment was increasing in the early 1970's the economy was growing fairly strongly and off-farm jobs still presented viable opportunities for many dairy farmers and dairy farm workers.

By the late 1970's formulae pricing had become the norm in the milk production sector, substantially reducing the pressure created by increasing input prices. Off-farm wages were rising more slowly and unemployment rates had continued to increase. These factors combined to reduce the incentives for dairy farmers to leave the industry and accounted for the higher retention rate of dairy farmers between 1976 and 1981. In addition the earlier attrition process had already removed the weakest dairy units.

Approximately one-third of all dairy-type farms became "no type" (i.e. sales fell below $2500) or went out of business during 1966-71 and 1971-76. From 1976 to 1981 this proportion fell to 22 percent. In addition to the increased viability of dairy-type farms discussed above, the proportion switching from dairy to other farm types rose from 10 percent during 1966-71 to 14 percent during 1976-81, another reflection of the increased viability of dairy-type farms over the 15-year period.

Most dairy farmers shifting to another main enterprise moved into cattle, hogs or sheep production, which Statistics Canada includes in one group. Within this grouping, beef production was likely the main choice since both dairy livestock and equipment would lend themselves most readily to this adjustment. Average annual increases in cattle and calf prices during 1971-75 dropped well below the average annual "increase in farm input prices", weakening the shift to cattle. However, during 1976-1980, cattle and calf prices experienced average annual increases close to 17 percent, and encouraged more dairy farmers to adjust to cattle production.

Small grain production was the second most common type of enterprise to which dairy farmers adjusted over the 15-year period. Feed grains were probably grown on most if not all these farms prior to their shift out of dairy. Grain prices fell on average during 1966-70 but rose sharply during 1971-75 and continued to rise, albeit more slowly, during 1976-80. These price increases were reflected in an increased proportion of dairy farmers moving into small grain production during 1971-76 and 1976-81 compared to 1966-71.

2.4.1 Provincial Details

The persistence rates of dairy-type farms in Atlantic Canada were somewhat below national levels throughout the 15-year period. Most dairy-type farms which changed type become cattle-hogs-sheep farms with this tendency being a little stronger in the region than for the country as a whole. New Brunswick dairy-type farms were least viable through the 15-year period. Thirty-two percent became no-type or went out of business from 1976 to 1981 compared to 22 percent nationally. Persistence of P.E.I. dairy-type farms was also relatively low but adjusting Island dairy farmers were more likely to switch to other enteprises than their New Brunswick counterparts.

Quebec dairy-type farms were more likely to continue as such than the Canadian average (66.7 vs. 63 percent during 1976-81). Only 5.8 percent were reclassified as cattle-hogs-sheep and 1.9 percent as small grains during 1976-81. In Ontario 63.7 percent stayed as dairy-type farms from 1976 to 1981 while 11.9 percent became cattle-hogs-sheep and 3.4 percent became small grains farms. Twenty-four percent of Quebec dairy-type farms became no type or went out of business between 1976 and 1981 compared to 19 percent in Ontario and 22 percent nationally. Quebec's higher rate of attrition among specialized dairy farms is consistent with attrition rates for medium-sized or larger dairy farms as defined earlier (18 or more cows). It may be part of the recent shift in Quebec away from traditional socio-economic patterns.

Prairie dairy-type farms were much less likely to persist than the national average (51-53 percent during 1976-81 compared to 63 percent nationally). In Manitoba 12.8 percent became cattle-hogs-sheep and 4.9 percent became small grains farms during 1976-81. In Alberta 14.8 percent became cattle-hogs-sheep and 8.1 percent became small grains during the same period. In Saskatchewan 11.4 percent became wheat farms, 7.0 percent cattle-hogs-sheep and 4.4 percent small grains.

Persistence rates for British Columbia dairy-type farms were below the national level during 1966-71 but quite close to it for the rest of the period. Cattle-hogs-sheep was the most frequent new class for ex-dairy-type farms (11.5 percent during 1976-81) followed by fruit and vegetables (1.0 percent). The proportion of B.C. dairy-type farms being reclassified as no-type or going out of business was well above the national level during 1966-71 but only slightly above during 1976-81. B.C.'s income assurance program of the mid-70's may have contributed to the lower rate of attrition during the period.

Tables 20 and A-61 to A-70 indicate the status at the beginning of each 5-year period of all farms classified as dairy-type at the end of the period. Across Canada, the proportion of dairy-type farms which had also been dairy-type farms 5 years earlier rose from 58 percent in 1971 to 72 percent in 1981. Over the same period the proportion of dairy-type farms which had previously been no type or were new entrants declined from 28 percent to 15 percent. Farms which had previously been classified as cattle-hogs-sheep made up 5.2 percent of 1981 dairy-type farms, down in both numerical and percentage terms from the previous two periods. Sharp increases in cattle prices from 1976 to 1980 would have contributed to a change in status of some mixed dairy-beef farms in the absence of any production response and in addition would have created production incentives toward beef. Similarly, high grain prices during 1970-75 reduced the incentive to shift from grains to dairy during 1971-76 and increased the likelihood of a reverse shift.

In the Maritimes the proportion of 1981 dairy-type farms which had also been dairy-type 5 years earlier was below the national level (P.E.I., 63.9 percent; Nova Scotia, 71.1 percent; New Brunswick, 64.6 percent; Canada, 72.5 percent). In Prince Edward Island, 12.3 percent had previously been mixed livestock farms and 2.6 percent cattle-hogs-sheep. In Nova Scotia 3.0 percent had been cattle-hogs-sheep while in New Brunswick 3.4 percent had previously been classed as other field crops.

Nearly 83 percent of 1981 Quebec dairy type farms had also been classed as dairy in 1976 and 2.2 percent had been cattle-hogs-sheep. In Ontario 77.5 percent had previously been dairy-type, 4.4 percent had been cattle-hogs-sheep and 4.2 percent had been mixed livestock.

In the Prairie provinces throughout the 15-year period less than half the dairy-type farms had been classified as dairy 5 years earlier. In Saskatchewan, for example, only 18.5 percent of 1981 dairy-type farms

TABLE 20: CANADA - START-OF-PERIOD STATUS OF FARMS WHICH WERE DAIRY-TYPE AT END OF PERIOD

	1966-71		1971-76		1976-81	
	Number	Percent	Number	Percent	Number	Percent
Dairy	31 850	57.6	30 540	63.7	30,365	72.5
Cattle, Hogs, Sheep	4 220	7.6	4 665	7.6	2 190	5.2
Poultry	315	0.6	165	0.3	55	0.1
Wheat	185	0.3	30	0.1	475	1.1
Small Grains	225	0.4	75	0.2	560	1.3
Other Field Crops	225	0.4	95	0.2	100	0.2
Fruit and Vegetables	60	0.1	55	0.1	35	0.1
Misc Specialty	90	0.2	105	0.2	35	0.1
Mixed Livestock	2 275	4.1	950	2.0	1 490	3.6
Mixed Field Crops	60	0.1	45	0.1	35	0.1
Other Mixed	290	0.5	165	0.3	150	0.4
No Type or Not Farming	15 535	28.1	12 020	25.1	6 365	15.2
Total	55 330	100.0	47 910	100.0	41 855	100.0

Source: Statistics Canada, Agriculture Census Match.

were classed as dairy-type in 1976; 21.3 percent had been classed as wheat farms in 1976; 14.5 percent had been mixed livestock; and 7.4 percent had been small grains. This high frequency of new specialized dairy farms during 1976-81 reflects relatively weak grain prices during the period as well as producer response to provincial programs aimed at encouraging expansion of industrial milk production.

In Manitoba, 46.4 percent of 1981 dairy-type farms had been dairy in 1976, 11.9 percent had been mixed livestock, 10.3 percent had been cattle-hogs-sheep and 7.2 percent had been small grains. In Alberta these figures were dairy, 36.0 percent; cattle-hogs-sheep, 22.9 percent; mixed livestock, 10.5 percent; small grains, 5.7 percent.

British Columbia was closer to the national picture in this respect. Previous dairy farms accounted for 67.5 percent of 1981 dairy-type farms while 5.7 percent had previously been classified as cattle-hogs-sheep.

2.4.2 Adjustment by Herd Size

Tables 21, 22 and 23 examine the type of adjustment made by dairy farmers who got out of dairy farming over each of the five year periods. By 1981, adjusting operators of small herds were still more likely to exit or cut back to a non-commercial level of production than larger operators but the difference became less pronounced. The apparent overall decrease through time in the tendency to become no type or go out of business is due in part to the constant $2500 sales cut-off for farm typing as this results in ascribing a farm-type at progressively smaller levels of physical production.

The tendency for dairy type farms to switch to small grains increased with increasing herd size in all three 5-year periods while a weak initial tendency toward more livestock based adjustments by larger herd operators was reversed by the end of the period. This shift may have been due to increasingly attractive grain prices and the tendency of larger dairy farms to have more crop land over the 15-year period. Tables A-71 through A-100 list this information for all provinces for each five year period.

TABLE 21. CANADA-NUMBER AND DISTRIBUTION OF FORMER DAIRY FARMS 1966-1971

	Number of Cows in 1966				
	3-17	18-47	48-92	93+	Total
Type of Farm 1971					
Number of Farms					
Cattle, Hogs, Sheep	1 415	2 185	210	30	3 840
Poultry	60	125	15	5	205
Wheat	20	35	5	-	60
Small Grains	95	225	45	5	370
Other Field Crops	70	105	15	-	190
Fruit and Vegetables	55	55	5	-	115
Misc Specialty	50	75	-	-	125
Mixed Livestock	245	220	15	-	480
Mixed Field Crops	25	55	5	-	85
Other Mixed	65	100	10	5	180
No Type or Not Farming	7 100	10 270	910	75	18 355
Total	9 200	13 450	1 235	120	24 005
Percentage Distribution					
Cattle, Hogs, Sheep	15.4	16.2	17.0	25.0	16.0
Poultry	0.7	0.9	1.2	4.2	0.9
Wheat	0.2	0.3	0.4	-	0.2
Small Grains	1.0	1.7	3.7	4.2	1.5
Other Field Crops	0.8	0.8	1.2	-	0.8
Fruit and Vegetables	0.6	0.4	0.4	-	0.5
Misc Specialty	0.5	0.6	-	-	0.5
Mixed Livestock	2.7	1.6	1.2	-	2.0
Mixed Field Crops	0.3	0.4	0.4	-	0.4
Other Mixed	0.7	0.7	0.8	4.2	0.7
No Type or Not Farming	77.2	76.4	73.7	62.5	76.5
Total	100.1	100.0	100.0	100.0	100.0

Source: Statistics Canada, Agriculture Census Match.

TABLE 22. CANADA - NUMBER AND DISTRIBUTION OF FORMER DAIRY FARMS 1971-1976

	Number of Cows in 1971				
	3-17	18-47	48-92	93+	Total
Type of Farm 1976					
Number of Farms					
Cattle, Hogs, Sheep	950	1 680	210	35	2 875
Poultry	30	75	5	-	110
Wheat	75	140	25	10	250
Small Grains	335	845	155	15	1 350
Other Field Crops	55	60	10	-	125
Fruit and Vegetables	50	75	10	-	135
Misc Specialty	15	35	5	-	55
Mixed Livestock	275	555	95	10	935
Mixed Field Crops	10	15	5	-	30
Other Mixed	100	215	25	-	340
No Type or Not Farming	5 385	10 320	1 320	120	17 145
Total	7 280	14 015	1 865	190	23 350
Percentage Distribution					
Cattle, Hogs, Sheep	13.0	12.0	11.3	18.4	12.3
Poultry	0.4	0.5	0.3	-	0.5
Wheat	1.0	1.0	1.3	5.3	1.1
Small Grains	4.6	6.0	8.3	7.9	5.8
Other Field Crops	0.8	0.4	0.5	-	0.5
Fruit and Vegetables	0.7	0.5	0.5	-	0.6
Misc Specialty	0.2	0.2	0.3	-	0.2
Mixed Livestock	3.8	4.0	5.1	5.3	4.0
Mixed Field Crops	0.1	0.1	0.3	-	0.1
Other Mixed	1.4	1.5	1.3	-	1.5
No Type or Not Farming	74.0	73.6	70.8	63.2	73.4
Total	100.0	100.0	100.0	100.0	100.0

Source: Statistics Canada, Agriculture Census Match.

TABLE 23. CANADA - NUMBER AND DISTRIBUTION OF FORMER DAIRY FARMS, 1976-1981

	Number of Cows in 1976				
	3-17	18-47	48-92	93+	Total
Type of Farm 1981					
Number of Farms					
Cattle, Hogs, Sheep	1 445	2 305	460	50	4 260
Poultry	35	65	10	5	115
Wheat	45	110	40	5	200
Small Grains	200	775	250	35	1 260
Other Field Crops	60	105	20	-	185
Fruit and Vegetables	30	60	10	5	105
Misc Specialty	65	115	10	5	195
Mixed Livestock	95	185	50	-	330
Mixed Field Crops	10	15	0	-	25
Other Mixed	45	80	15	5	145
No Type or Not Farming	3 220	6 165	1 205	140	10 730
Total	5 250	9 980	2 070	250	17 550
Percentage Distribution					
Cattle, Hogs, Sheep	27.5	23.1	22.2	20.0	24.3
Poultry	0.7	0.7	0.5	2.0	0.7
Wheat	0.9	1.1	1.9	2.0	1.1
Small Grains	3.8	7.8	12.1	14.0	7.2
Other Field Crops	1.1	1.1	1.0	-	1.1
Fruit and Vegetables	0.6	0.6	0.5	2.0	0.6
Misc Specialty	1.2	1.2	0.5	2.0	1.1
Mixed Livestock	1.8	1.9	2.4	-	1.9
Mixed Field Crops	0.2	0.2	-	-	0.1
Other Mixed	0.9	0.8	0.7	2.0	0.8
No Type or Not Farming	61.3	61.8	58.2	56.0	61.1
Total	100.0	100.0	100.0	100.0	100.0

Source: Statistics Canada, Agriculture Census Match.

2.5 Resource Use Patterns

Resource utilization for 1966 to 1981 is depicted in Tables 24 to 27. Average total land per farm increased throughout the 15-year period in each herd-size class except for a small decline from 1976 to 1981 for farms with 3-17 cows. Total improved land and total cropland also increased steadily for each herd size class through the period; oats and barley and wheat showed the strongest increases. Farms with herds of 18 or more cows reduced their land allocated to improved pasture after 1971. The ratio of improved land to total farm land generally increased with herd size and increased through time.

The average number of milking cows on farms with 3-17 cow herds declined from 9 in 1966 to 8 in 1976. In the larger herd classes average cow numbers increased through the period. All classes had increased numbers of replacement heifers on hand through the period. There was also a tendency in all size classes to keep more "other cattle" on hand through the period; this trend was strongest in the 48-92- and 93-or-more-cow herds. These large and very large dairy farms also doubled their swine numbers from 1966 to 1981. The smallest herd class averaged between 5.0 and 6.2 acres of improved land per cattle-beast through the four censuses. This ratio declined with increasing herd size and ranged from a low of 2.9 to a high 3.5 acres per cattle-beast for farms with 18 or more cows over the 15-year period.

Days of off-farm work reported by dairy farm operators were highest for those with small herds (41 to 46 days per annum) and lowest for operators of large or very large herds (7 to 20 days). In the large and very large herds hired labour declined after 1971. Small herd operators reported 4-5 weeks hired labour from 1971 through 1981 while medium sized operators increased their hired labour from 11 to 15 weeks over the period. The larger operators appear to have replaced

some hired labour with more efficient "chore" capital (e.g. milking, feeding and manure handling systems). On the smaller farms, chore labour is more likely to be provided by family members with low opportunity costs while hired labour is associated with seasonal field operations (e.g. seeding, haying, harvesting) where fewer efficiencies have been created over the 15-year period.

Wages paid increased for all herd size classes through the period. Average weekly wages reported in 1981 were: 3-17 cows, $147; 18-42 cows, $150; 48-92 cows, $178; 93+ cows, $221. Farms with larger herds are probably paying higher wages to attract and retain better qualified permanent employees.

Capital value of dairy operations in Canada grew by 600 to 700 percent from 1966 to 1971. Total capital value of small-scale operations increased from $33 812 in 1966 to $267 010 in 1981, while medium-sized herds averaged $47 045 in 1966 and $342 212 in 1981. Total capital value of farms with large herds averaged $112 353 in 1966 and $746 410 in 1981 and farms with very large herds averaged $223 294 in 1966 and $1 641 770 in 1981.

Gross sales during 1966 in the four herd size classes averaged $5 064, $9 700, $26 181, and $55 589 respectively. By 1981 these figures had risen to $26 960, $54 923, $121 900 and $274 932. The ratio of gross sales to capital value increased with increasing herd size in both 1966 and 1981 although the largest increase occurred between the small and medium size herds. Over the 15-year period the sales/capital ratio dropped off sharply in each herd-size class.

	3-17 cows	18-47 cows	48-92 cows	93+ cows
1966	.150	.206	.233	.238
1981	.101	.160	.163	.167

TABLE 24: CANADA-AVERAGE RESOURCES & GROSS SALES OF DAIRY FARMS BY HERD SIZE, 1966

	3-17 Cows	18-47 Cows	48-92 Cows	93+ Cows
TOTAL FARM LAND (acres)	334	257	465	824
Total Improved Land	199	171	335	598
Total Crop Land	130	118	232	432
Oats & barley	36	30	59	115
Grain corn	1	2	6	13
Wheat	42	8	22	25
Potatoes	1	1	1	1
Soybeans & rapeseed	3	1	1	2
Other crop land	48	77	143	276
Improved Pasture	26	40	70	126
Summerfallow	38	9	24	27
Other Improved Land	6	5	8	14
Total Unimproved Land	135	86	129	226
Woodland	42	43	48	52
Other unimproved land	93	43	81	174
LIVESTOCK (number)				
Total Cattle	32	49	102	212
Milking cows	9	26	59	125
Replacement heifers	2	6	14	30
Other cattle	22	17	29	57
Pigs	15	20	23	41
Sheep	2	2	5	9
Chickens	107	151	272	379
FARM LABOUR				
Off-Farm Work (days p.a.)	43	23	12	20
Wages Paid (dollars p.a.)	17	44	257	796
Hired Labour (person-yrs.)	-	-	1	3
TOTAL CAPITAL VALUE (dollars)	33 812	47 045	112 353	233 297
GROSS SALES (dollars)	5 064	9 700	26 181	55 589

Source: Statistics Canada, Agriculture Census Match.

TABLE 25: CANADA-AVERAGE RESOURCES & GROSS SALES OF DAIRY FARMS BY HERD SIZE, 1971

	3-17 Cows	18-47 Cows	48-92 Cows	93+ Cows
TOTAL FARM LAND (acres)	369	270	466	1 016
Total Improved Land	229	181	339	646
Total Crop Land	146	125	239	458
Oats & barley	51	29	56	115
Grain corn	1	4	13	25
Wheat	33	7	17	39
Potatoes	-	-	1	1
Soybeans & rapeseed	8	1	3	5
Other crop land	53	83	150	273
Improved Pasture	28	40	65	112
Summerfallow	48	12	27	63
Other Improved Land	7	5	8	12
Total Unimproved Land	139	88	127	371
Woodland	39	45	49	78
Other unimproved land	100	43	78	293
LIVESTOCK (number)				
Total Cattle	37	55	109	224
Milking cows	9	28	59	125
Replacement heifers	2	7	15	31
Other cattle	27	20	34	68
Pigs	22	22	29	41
Sheep	2	1	3	12
Chickens	109	136	361	532
FARM LABOUR				
Off-Farm Work (days p.a.)	41	20	11	11
Wages Paid (dollars p.a.)	18	47	242	938
Hired Labour (weeks p.a.)	4	11	51	136
TOTAL CAPITAL VALUE (dollars)	47 550	64 653	152 133	351 289
GROSS SALES (dollars)	6 695	13 739	35 038	86 790

Source: Statistics Canada, Agriculture Census Match.

TABLE 26: CANADA-AVERAGE RESOURCES & GROSS SALES OF DAIRY FARMS BY HERD SIZE, 1976

	3-17 Cows	18-47 Cows	48-92 Cows	93+ Cows
TOTAL FARM LAND (acres)	402	280	471	967
Total Improved Land	239	190	351	722
Total Crop Land	156	142	264	545
Oats & barley	46	27	52	138
Grain corn	1	4	14	28
Wheat	43	10	25	69
Potatoes	-	-	-	-
Soybeans & rapeseed	2	1	1	7
Other crop land	63	100	172	302
Improved Pasture	29	34	50	92
Summerfallow	48	10	30	72
Other Improved Land	6	4	6	13
Total Unimproved Land	162	90	120	245
Woodland	42	50	51	64
Other unimproved land	120	40	69	181
LIVESTOCK (number)				
Total Cattle	48	60	112	238
Milking cows	8	30	61	129
Replacement heifers	2	8	16	33
Other cattle	37	22	35	76
Pigs	15	17	29	65
Sheep	2	1	3	7
Chickens	96	126	213	1 307
FARM LABOUR				
Off-Farm Work (days p.a.)	43	15	7	9
Wages Paid (dollars p.a.)	n.a.	n.a.	n.a.	n.a.
Hired Labour (weeks p.a.)	4	11	40	125
TOTAL CAPITAL VALUE (dollars)	116 840	145 422	316 738	712 151
GROSS SALES (dollars)	22 710	32 631	70 866	172 783

Source: Statistics Canada, Agriculture Census Match.

TABLE 27: CANADA-AVERAGE RESOURCES & GROSS SALES OF DAIRY FARMS BY HERD SIZE, 1981

	3-17 Cows	18-47 Cows	48-92 Cows	93+ Cows
TOTAL FARM LAND (acres)	391	303	530	1 117
Total Improved Land	257	215	412	838
Total Crop Land	168	158	312	625
Oats & barley	47	29	65	167
Grain corn	2	8	25	43
Wheat	53	15	41	106
Potatoes	-	-	-	1
Soybeans & rapeseed	5	2	5	16
Other crop land	60	104	176	293
Improved Pasture	33	38	57	117
Summerfallow	48	13	35	80
Other Improved Land	8	6	9	16
Total Unimproved Land	134	88	117	279
Woodland	34	49	47	57
Other unimproved land	100	39	70	222
LIVESTOCK (number)				
Total Cattle	43	65	123	264
Milking cows	8	32	61	131
Replacement heifers	3	12	24	43
Other cattle	32	21	38	90
Pigs	25	26	48	82
Sheep	n.a.	n.a.	n.a.	n.a.
Chickens	100	123	243	911
FARM LABOUR				
Off-Farm Work (days p.a.)	46	15	11	17
Wages Paid (dollars p.a.)	743	2 252	7 108	21 426
Hired Labour (weeks p.a.)	5	15	40	97
TOTAL CAPITAL VALUE (dollars)	267 010	342 212	746 410	1 641 770
GROSS SALES (dollars)	26 960	54 923	121 900	274 932

Source: Statistics Canada, Agriculture Census Match.

2.5.1 Provincial Analysis

Provincial data concerning resource utilization on dairy farms from 1966 through 1981 are contained in tables A-101 through A-140. Because there were very few observatons in some cells the random rounding process may have suppressed part of the data for herds of 93 or more cows.

On a provincial basis, Newfoundland dairy enterprises in all size classes operated with substantially smaller crop and pasture acreages than the Canadian average. Dairy herds were similar in average size to the national averages in each size class; however, Newfoundland operators reported significantly fewer replacement heifers. Operators of small dairy enterprises reported significantly more days off-farm work in 1976 and 1981 (78 and 66) than the national average (43 and 46). Average capital values for small dairy farms were well below national levels in 1981 ($129 963 vs. $267 010) however for medium sized herds (18-47 cows) they were significantly higher ($427 611 vs. $342 212). The 1981 Newfoundland ratio of gross sales to total capital was .108 for 3-17 cow herds and .085 for 18-47 cow herds.

Maritime operators of 3-17 cow dairy enterprises farmed significantly less total land on average than Canadian small-scale dairy farmers (e.g. in 1981, P.E.I., 174 acres; Nova Scotia, 219 acres; New Brunswick, 228 acres; Canada, 391 acres). Crop land was substantially lower with only nominal acreages of feed grains planted. Operators of 18-47 cow herds, on the other hand, had total acreages close to or above the national average and reported two-thirds or more of the average crop land recorded nationally with medium-size dairy herds. Average herd size in each class was comparable to the national level in 1981. More replacement heifers and fewer other cattle were recorded compared to national averages.

Prince Edward Island dairy farmers tended to work fewer days off the farm than the Canadian averages while Nova Scotia and New Brunswick farmers worked more days off the farm. Both hired labour and wages paid on Maritime dairy farms were higher than national averages in 1981.

Total capital values during 1981 on small-scale Maritime dairy farms were less than half the national average, but on larger dairy farms they were closer to national levels. Gross sales on small farms were around half the national average and on larger Maritime dairy farms they were close to national levels. The ratios of sales to total capital in 1981 were:

	3-17 cows	18-47 cows	48-92 cows	93+ cows
P.F.I.	.120	.185	.214	.220
Nova Scotia	.116	.221	.274	.331
New Brunswick	.112	.198	.281	.331

Quebec and Ontario dairy farms in each herd-size class had smaller land bases than the comparable national averages. Crop acreages were smaller due mainly to lower acreages of wheat and oats and barley. Grain corn was more common in all Ontario herd-size classes and on very large Quebec dairy farms. Quebec and Ontario average herd sizes were similar to the national average in each class while Ontario operators reported above-average numbers of replacement heifers.

Quebec operators averaged less off-farm work and Ontario operators somewhat more in each herd-size class. Similar patterns prevailed with regard to hired labour. Total 1981 capital and gross sales in Quebec were lower in each size class than the national averages while in Ontario these were closer to or above national levels. The ratios of gross sales to total capital value were:

	3-17 cows	18-47 cows	48-92 cows	93+ cows
Ouebec	.128	.203	.226	.235
Ontario	.133	.147	.157	.192

The average acreage of Prairie dairy farms in all four size classes was substantially larger than the comparable national figure. During 1981, for example, farms with 18-47 cow herds averaged 641 acres in Manitoba, 892 acres in Saskatchewan and 649 acres in Alberta compared to 303 acres for Canada. The acreages of wheat and oats and barley were well above national averages in each herd-size class.

Prairie operators of 3-17 and 18-47 cow herds averaged 1 to 2 fewer cows than the national averages for these classes. All herd-size classes reported fewer replacement heifers than the national averages, however all classes reported substantially more other cattle on hand in 1981. Large and very large dairy operators also reported more swine on average than were recorded nationally.

Alberta operators in all size classes reported more days off-farm labour in 1981 than the national averages. Small-scale operators in Manitoba and Saskatchewan reported fewer days off-farm labour. All three provinces reported less hired labour and less wages paid in each size class than the comparable national figures.

Alberta and Saskatchewan total capital values were well above national averages in each herd-size class; Manitoba values were above national levels for 18-47 and 48-92 cow herds but below for the small and very large herd classes. Ratios of gross sales to total capital for 1981 were:

	3-17 cows	18-47 cows	48-92 cows	93+ cows
Manitoba	.129	.157	.186	.170
Saskatchewan	.094	.122	.141	.120
Alberta	.078	.086	.092	.123

Small-scale British Columbia dairy operators traditionally have operated with relatively large land bases containing large acreages of unimproved land. In general British Columbia dairy farms of all sizes contain substantially less improved land and crop land than the national averages for the same herd sizes and relatively little feed grain is grown by national dairy standards.

Small scale operators reported 2 to 3 fewer cows than the national average for 3-17 cow herds. Medium, large and very large dairy operators, on the other hand, report significantly larger average herds than for Canada as a whole.

British Columbia operators in all size classes reported considerably more off-farm work than the national averages as small and medium-sized operators averaged 171 and 31 days off-farm work in 1981 compared to 46 and 15 for Canada as a whole. All size classes also reported more of both hired labour and wages paid than was the case at the national level.

All size classes of British Columbia dairy farms reported substantially higher average capital values in 1981 than comparable farms nationally. Gross sales were also higher for all classes except those with 3-17 cow herds. The provincial ratios of sales to capital for 1981 were:

	3-17 cows	18-47 cows	48-92 cows	93+ cows
1981	.062	.124	.157	.171

2.6 Age Characteristics of Dairy Farm Operators

Age distributions of Canadian non-dairy and dairy farmers in each census year from 1966 through 1981 are presented as Table 28. The proportion of non-dairy farmers less than 45 years of age (three youngest age cohorts) was 39.0 percent in 1966 but by 1981 had risen to 44.5 percent. Among all dairy farmers, 39.2 percent were under 45 in 1966 but rose to 41.8 percent in 1981. Non-dairy farmers over 64 years of age comprised 13.7 percent of all non-dairy farmers in 1966 but fell to 10.7 percent in 1981. Among dairy farmers, this oldest group made up 8.7 percent of the 1966 total but only 7.0 percent in 1981.

In summary, the age distribution among both dairy and non-dairy farmers was shifting toward the younger age groups through the 15-year period but the extent of this movement was greater among non-dairy farmers. This suggests that obstacles to entry and/or survival of young farmers were greater in the dairy sector than in the non-dairy sector. Given the lower number of older farmers in the dairy sector, obstacles to survival and/or incentives to leave for older farmers seem greater in the dairy sector than in the non-dairy sector.

TABLE 28: CANADA- AGE DISTRIBUTION OF FARM OPERATORS

	1966	1971	1976	1981
	number (percent)			
Non-Dairy				
under 25	6 670 (2.6)	6 985 (2.7)	10 530 (4.0)	10 190 (3.9)
25-34	34 800(13.6)	33 895(13.3)	41 975(15.8)	47 700(18.1)
34-44	58 165(22.8)	56 615(22.3)	57 565(21.6)	59 270(22.5)
45-54	66 440(26.0)	69 935(27.5)	69 415(26.0)	64 610(24.5)
55-64	54 555(21.3)	55 340(21.8)	56 455(21.2)	54 065(20.5)
over 64	34 915(13.7)	31 485(12.4)	30 395(11.4)	28 115(10.7)
Total	255 540	254 260	266 335	263 945
Dairy				
3-17 Cows				
under 25	1 730 (1.4)	725 (1.2)	405 (1.5)	330 (2.2)
25-34	13 420(11.0)	5 225 (8.6)	2 350 (8.8)	1 495 (9.8)
35-44	28 705(23.6)	12 505(20.7)	5 095(19.1)	2 635(17.3)
45-54	36 670(30.2)	19 475(32.2)	8 270(31.0)	4 290(28.2)
55-64	28 825(23.7)	16 560(27.3)	7 615(28.5)	4 415(29.0)
over 64	12 120(10.0)	6 070(10.0)	2 960(11.1)	2 060(13.5)
Total	121 470	60 550	26 700	15 235
18-47 Cows				
under 25	945 (1.9)	820 (1.9)	945 (2.7)	840 (3.0)
25-34	7 315(15.1)	6 695(15.2)	5 675(16.2)	5 185(18.4)
35-44	14 245(29.3)	12 185(27.7)	8 935(25.6)	6 960(24.6)
45-54	14 750(30.4)	14 530(33.0)	11 355(32.5)	8 240(29.2)
55-64	8 475(17.5)	7 910(18.0)	6 455(18.5)	5 655(20.1)
over 64	2 815 (5.8)	1 920 (4.4)	1 560 (4.5)	1 335 (4.7)
Total	48 545	44 065	34 930	28 205
48-92 Cows				
under 25	55 (1.4)	100 (1.7)	230 (2.6)	250 (2.8)
25-34	505(13.1)	930(15.7)	1 625(18.5)	1 790(20.0)
35-44	1 135(29.4)	1 810(30.7)	2 315(26.4)	2 370(26.4)
44-54	1 205(31.3)	1 930(32.7)	2 925(33.3)	2 760(30.7)
55-64	685(17.8)	915(15.5)	1 340(15.3)	1 470(16.4)
over 64	270 (7.0)	220 (3.7)	345 (3.9)	330 (3.7)
Total	3 855	5 905	8 785	8 965

- continued -

TABLE 28: CANADA- AGE DISTRIBUTION OF FARM OPERATORS (concluded)

	1966	1971	1976	1981
		(number percent)		
93+ Cows				
under 25	5 (1.6)	10 (1.8)	25 (2.4)	45 (3.2)
25-34	40(12.9)	70(12.7)	155(15.1)	275(19.4)
34-44	90(29.0)	155(28.2)	250(24.4)	335(23.7)
45-54	85(27.4)	175(31.8)	370(36.1)	450(31.8)
55-64	70(22.6)	110(20.0)	170(16.6)	260(18.4)
over 64	25 (8.1)	30 (5.5)	50 (4.9)	45 (3.2)
Total	310	550	1 025	1 415
Total Dairy				
under 25	2 735 (1.6)	1 655 (1.5)	1 605 (2.2)	1 465 (2.7)
25-34	21 280(12.2)	12 920(11.6)	9 805(13.7)	8 745(16.2)
35-44	44 175(25.4)	26 655(24.0)	16 595(23.2)	12 300(22.9)
45-54	52 710(30.3)	36 110(32.5)	22 920(32.1)	15 740(29.2)
55-64	38 055(21.8)	25 495(23.0)	15 580(21.8)	11 800(21.9)
over 64	15 230 (8.7)	8 240 (7.4)	4 915 (6.9)	3 770 (7.0)
Total	174 180	111 070	71 440	53 820
Total Farms				
under 25	9 400 (2.2)	8 640 (2.4)	12 135 (3.6)	11 670 (3.7)
25-34	56 080(13.1)	46 815(12.8)	51 790(15.3)	56 420(17.8)
35-44	102 340(23.8)	83 270(22.8)	74 160(22.0)	71 565(22.5)
45-54	119 145(27.7)	106 045(29.0)	92 335(27.3)	80 355(25.3)
55-64	92 615(21.5)	80 835(22.1)	72 040(21.3)	65 870(20.7)
over 64	50 145(11.7)	39 725(10.9)	35 315(10.5)	31 905(10.0)
Total	429 725	365 330	337 775	317 765

Source: Statistics Canada, Agriculture Census Match.

On farms with 3-17 cows the proportion of operators under 45 declined from 36.0 percent in 1966 to 29.3 percent in 1981. In the 18-47-cow class a small decline also occurred in the proportion of operators under 45. By this measure both of these groups had aged over the 15-year period. Among farmers with large and very large dairy herds the proportions under 45 years old increased from 1966 to 1981 i.e. these two groups were getting younger.

Table 29 focuses on the age characteristics of Canadian dairy farmers making certain kinds of adjustments during the three inter-censal periods. Those operators staying in the dairy business were younger on average in each of the three periods than those switching to non-dairying or those leaving agriculture. During 1976-81, for example, 44.6 percent of on-going dairy operators were under 45 and 4.7 percent were over 64 years of age at the start of the period. Among those switching to non-dairy farming, 34.3 percent were under 45 and 7.8 percent were over 64 at the start of the period. Among those who left farming entirely during 1976-81, only 28.6 percent were under 45 in 1976 while 12.4 percent were over 64.

The data in Table 29 for those dairy operators who switched from non-dairy farming or who began farming during any of the 3 periods reflect end-of-period ages, since the census data contain no start-of-period information on new entrants. Farmers less than 35 years of age made up 16.4 percent of those who switched from non-dairy to dairy during 1966-71; by 1976-81 this proportion had declined to 15.3 percent. Among new dairy operators who began farming during 1966-71 32.2 percent were less than 35; by 1976-81 this proportion had risen to 48.0 percent.

TABLE 29: CANADA- AGE DISTRIBUTION OF ADJUSTING DAIRY FARM OPERATORS AT START OF PERIOD

	1966-71	1971-76	1976-81
	number (percent)		
Stay in Dairy			
under 25	1 345 (1.6)	885 (1.7)	950 (2.3)
25-34	12 065(14.1)	7 780(14.7)	6 515(15.9)
35-44	26 345(30.8)	16 305(30.7)	10 810(26.4)
45-54	28 010(32.7)	18 265(34.4)	13 785(33.7)
55-64	13 975(16.3)	7 965(15.0)	6 865(16.8)
over 64	3 785 (4.4)	1 825 (3.4)	1 925 (4.7)
Total	85 540	53 025	40 875
Switch to Non-Dairy			
under 25	645 (1.6)	340 (1.2)	315 (1.8)
25-34	5 085(12.6)	2 930(10.6)	1 890(11.0)
35-44	9 995(24.8)	6 175(22.3)	3 705(21.5)
45-54	12 300(30.5)	9 395(34.0)	5 520(32.1)
55-64	9 285(23.0)	6 875(24.9)	4 465(25.9)
over 64	3 060 (7.6)	1 935 (7.0)	1 340 (7.8)
Total	40 340	27 645	17 220
Cease Farming			
under 25	750 (1.6)	425 (1.4)	330 (2.5)
25-34	4 130 (8.5)	2 200 (7.2)	1 395(10.5)
35-44	7 830(16.2)	4 170(13.7)	2 085(15.6)
45-54	12 415(25.7)	8 460(27.8)	3 620(27.1)
55-64	14 770(30.6)	10 665(35.1)	4 240(31.8)
over 64	8 390(17.4)	4 480(14.7)	1 650(12.4)
Total	48 310	30 415	13 340
Switch from Non-Dairy			
under 25	80 (1.0)	35 (0.7)	95 (1.5)
25-34	1 285(15.4)	800(15.5)	850(13.8)
35-44	2 410(28.8)	1 510(29.3)	1 420(23.1)
45-54	2 375(28.4)	1 480(28.7)	1 700(27.6)
55-64	1 545(18.5)	940(18.2)	1 310(21.3)
over 64	670 (8.0)	385 (7.5)	765(12.4)
Total	8 365	5 155	6 155

- continued -

TABLE 29: CANADA- AGE DISTRIBUTION OF ADJUSTING DAIRY FARM OPERATORS AT START OF PERIOD (concluded)

	1966-71	1971-76	1976-81
		number (percent)	
Begin Farming			
under 25	1 060 (6.2)	1 375(10.4)	715(10.5)
25-34	4 460(26.0)	4 865(36.7)	2 545(37.5)
35-44	4 040(23.5)	3 095(23.3)	1 540(22.7)
45-54	3 805(22.2)	2 265(17.1)	1 090(16.0)
55-64	2 720(15.8)	1 145 (8.6)	660 (9.7)
over 64	1 090 (6.3)	515 (3.9)	250 (3.7)
Total	17 165	13 265	6 790

1. Age at end of period

Source: Statistics Canada, Agriculture Census Match.

This difference between the age distributions of young farmers who converted to dairy from another type of farming and those who came straight into dairying suggests that entry is easier for the latter group, probably because they are more likely to be taking over an established family dairy operation. Without this advantage, entry is substantially more difficult and this difficulty increased through the 1966-81 period.

Age data for Quebec and Ontario are presented in Appendix tables A-141 through A-144. The proportions of Quebec dairy farmers under 45 years of age were significantly higher than the national figures during each census year (e.g. in 1981 45.8 percent of Quebec dairy farmers were under 45 compared to 41.8 percent nationally). In Ontario the proportions in this age range were somewhat below national levels (e.g. 40.1 percent in 1981). Concerning non-dairy farmers, the proportions under 45 years of age were below national levels for each census except in 1981 when Quebec recorded an increase to 44.5, up from 41.4 percent in 1976. This change may reflect the determined drive by the government of Quebec to strengthen its agricultural sector through a variety of policies and programs.

Among those Quebec farmers staying in dairy from 1966 to 1981, the proportion under 45 years of age ranged from 49 to 53 percent, 4 to 5 percent above comparable figures for Canada. In Ontario, farmers under 45 made up 43 to 45 percent of on-going dairy operators.

A higher proportion of Quebec farmers switching to non-dairy farming during 1976-81 was under 45 years of age in 1976 (37.0 percent) than for the country as a whole (34.3 percent). In Ontario this figure was 29.7 percent.

The proportion of Ontario dairy farmers who ceased farming and who also were under 45 years of age at the start of the period rose from 22.9 percent during 1966-71 (well below the national level) to 28.1 percent during 1976-81 (very close to the national level). Younger farmers were forming an increasing proportion of those dairy farmers who left agriculture. In Quebec this proportion also rose during the period from 22.3 percent in 1971-76 to 28.6 percent during 1976-81.

2.7 Resource Adjustments by Former Dairy Farmers

Tables 30, 31 and 32 outline major changes which occured on Canadian dairy-type farms whose operators adjusted to non-dairy farming during 1966-81. Farms which became "no type" (i.e., sales fell below $2,500) are excluded.

Herd size had some bearing on the type of land adjustments by these farmers. Those with 3-17 and 18-47 cow herds reduced their improved pasture and forage acreages by relatively small amounts as they switched from dairy to other major enterprises. Operators with 48 or more cows were more likely to cut back hay and forage significantly and produce more oats and barley, grain corn, wheat and oilseeds thereafter.

The shift out of dairying was accompanied by increasingly large reductions in average numbers of milk cows in successive 5-year periods. Average herd size declined from 24 to 9 among farmers adjusting out of dairy during 1966-71. Ten years later the same adjustment process reduced average herd size from 30 to 3 cows indicating a greater tendency for adjusting farmers to get out of dairy completely rather than to adjust by means of reducing the size of the dairy herd.

Average hog numbers on these farms increased with the adjustment away from dairy; this increase was strongest during 1976-81. Average chicken numbers also increased during the adjustment process but this tendency was strongest during 1966-71 before poultry supply management made entry more difficult.

Hired labour was recorded in "person-years" during the 1966 census and subsequently in weeks per annum. Notwithstanding this change, hired labour decreased for the larger farms adjusting out of dairy during the three 5-year periods. Wages paid also decreased with the adjustment away from dairy during 1966-71.

Average days off-farm work increased after the adjustment out of dairying by 12 days during 1966-71, 13 days during 1971-76, and 15 days during 1976-81 reflecting lower time requirements for non-dairy type of farming. During 1976-81 average off-farm work rose from 33 days to 48 days for all farmers who had adjusted from dairy to non-dairy farming. Adjusting small herd operators worked an average of 62 days off the farm in 1976. After leaving dairying they added only 8 more days of off-farm work. Adjusting operators of larger herds worked substantially less off the farm while dairying (23 days for operators of 18-47-cow herds in 1976) but added 17-20 days of off-farm work after leaving dairying.

In addition to adding more off-farm work, operators of medium-size and large dairy herds added 27 to 31 percent to their gross sales as they adjusted out of dairying between 1976 and 1981. Adjusting operators of small herds added only 20 percent to gross sales over the same period but previously during 1966-71 and 1971-76 small herd owners moving from dairying to other types of farming had increased their gross sales by 69 and 128 percent respectively, well above the increases recorded by medium-size and large operators.

2.7.1 Provincial Analysis

Table A-145 through A-174 present provincial detail on adjustments made by dairy farmers who switched to other enterprises from 1966 to 1981. Empty columns indicate fewer than five farms switched up from dairy to other main enterprises. This suggests restricting conclusions to Quebec and Ontario.

Small and medium-size Quebec dairy operators adjusting to other types of farming during 1976-81 experienced a greater relative increase in gross sales than similar adjusting dairy farmers in Canada as a whole.

Despite this, their ending sales were below the national level. Average 1981 gross sales for those who had had up to 17 cows in 1976 were $12,813. Days of off-farm work for this group declined from 54 in 1976 to 51 in 1981 while at the national level adjusting operators of small herds averaged $15,604 gross sales and 70 days of off-farm work in 1981. Adjusting operators of 18-47 cow herds in Quebec averaged $35,695 gross farm sales in 1981 compared to $39,710 nationally. Their 1981 average days of off-farm work were 34 versus 40 at the national level.

Ontario operators who adjusted out of small and medium-size dairy enterprises during 1976-81 had higher ending gross sales and more days of off-farm work than the national averages for all such farmers. They tended to add more beef cattle and swine on average during the adjustment than their Quebec counterparts.

Tables 33, 34 and 35 focus on changes in land use, labour characteristics, sales and capital value of Canadian dairy-type farms adjusting to cattle-hogs-sheep, mixed livestock or small grains during each of the three inter-censal periods. These are the three most common farm types into which dairy farms were transformed when the dairy enterprise was reduced substantially or abandoned.

It is difficult to identify systematic patterns of change by beginning herd size, ending farm type or through time. During the 15-year period dairy-type farms operators with small or medium-size herds typically increased their total land base as they adjusted to any of the three other farm types mentioned above; this tendency was strongest with respect to those switching to small grains and weakest for those switching to cattle-hogs-sheep. Dairy-type farmers switching to mixed livestock or small grains typically increased both their grain acreages and total crop land, often accompanied by reduced acreages of improved pasture.

Dairy-type operators switching to cattle-hog-sheep or small grains increased their days of off-farm work in each of the three inter-censal periods. Those switching to mixed livestock farming were more likely to reduce their off-farm work during 1966-71 and 1971-76; by 1976-81 they were increasing off-farm work with the adjustment away from dairying.

A switch from dairy to cattle-hogs-sheep or small grains was also accompanied by the use of less hired labour throughout the 15-year period with the reduction being greatest in the case of adjustment to small grains. Those switching to mixed livestock, on the other hand, increased their use of hired labour.

Total capital value increased throughout the 15-year period for virtually all herd sizes with the switch away from dairy to cattle-hogs-sheep, mixed livestock or small grains. The relative change was the least during the 1966-71 period. Gross sales also tended to increase with the adjustment away from dairy farming. Gains were weakest for those switching to small grains; during 1966-71 many operators making this adjustment experienced declining gross sales reflecing weak grain markets during that period.

Tables A-175 through A-204 in the Appendix contain similar information at the provincial level on dairy-type farmers adjusting to cattle-hog-sheep, mixed livestock or small grains. Adjusting Maritime dairy farmers shifted mainly to the cattle-hogs-sheep classification as they moved away from the dairy sector. Former P.E.I. dairy farmers were able to increase their gross sales more than their New Brunswick and Nova Scotia counterparts through most of the 15-year period.

Quebec dairy farmers who switched to small grains during 1976-81 increased their grain acreage significantly during the transition. Their gross sales increased by more than two-thirds with the transition. During 1971-76 Quebec farmers making the same shift experienced declining gross sales despite the strong grain price increases which occurred during that period. Those switching to grain production also added more days of off-farm work and had higher total capital values after the adjustment than dairy farmers switching to cattle-hogs-sheep or mixed livestock.

Ontario small-scale dairy farmers adjusting to cattle-hogs-sheep or mixed livestock during 1976-81 experienced declining average gross sales which were not made up by increasing off-farm work; those shifting to small grains over the same period increased both sales and days off-farm work. Hired labour on dairy farms which became small grains and cattle-hogs-sheep farms declined with the adjustment; those becoming mixed livestock farms increased their use of hired labour.

If 1976 sales and capital values are converted to 1981 dollars using the Consumer Price Index, 3-17 cow dairy farmers in Ontario shifting to cattle-hogs-sheep experienced a 45 percent real decline in gross sales and a one percent real decline in total capital from 1976 to 1981. A similar adjustment in Quebec produced a 12 percent decline in gross sales and 41 percent increase in total capital. Those switching to mixed livestock farming during the same period experienced similar real changes in sales and capital. Small dairy operators switching to small grains production experienced 23 percent real declines in sales in Ontario and 5 percent increases in Quebec. Their average capital values rose 14 and 44 percent respectively.

3.0 OPPORTUNITIES FOR ADJUSTMENT OUT OF DAIRY

This section examines opportunities for dairy farmers to switch to non-dairy farming or to off-farm work over the remainder of this decade. Perspectives are based importantly on papers presented at the 1984 Canadian Agricultural Outlook Conference and a comparison of actual and projected macro-economic indicators during 1966-1990. It should be pointed out that major unforeseen events (e.g. climatic, political, economic) may alter conditions faced by Canadian agriculture and result in shifting opportunities for adjustment out of the dairy sector.

It would appear that Canadian agriculture will not experience significant demand increases during the balance of this decade which would encourage exiting dairy farmers to move in large numbers into other types of production. On the domestic front, per capita pork consumption has varied in recent years in response to cyclical price changes; it is unlikely to expand substantially and may well be matched by increasing poultry meat consumption as has happended recently in the United States. Underutilized swine capacity would probably be drawn back into production if demand were to increase significantly. The poultry meat sector will probably experience continuing strong demand but offers only limited opportunities for new entrants because of supply management.

Domestic beef consumption has been declining or stagnant since 1976 when it reached a high of 54 kg per capita (beef and veal combined); by 1983 the Canadian average was 42 kg per capita. It has suffered from both the economic down-turn of the 1980's and shifting consumer tastes and seems unlikely to offer major new opportunities in the near future.

Export demand for Canadian agricultural products also appears unlikely to provide major new opportunities by the end of the decade. Improved grain production in the USSR and China could weaken international markets for both wheat and feed grains. Surplus agricultural production and aggressive marketing by competitiors along with increasing protectionism on the part of importers also may limit Canadian agricultural export opportunities. In summary, neither domestic nor export markets appear likely to offer significant new opportunities for dairy farmers who are looking at adjustment possibilities within agriculture.

Real GNP grew at an average annual rate of 4.8 percent during 1966-70, 5.1 percent during 1971-75 and 3.1 percent during 1976-80. During the same periods annual unemployment rates averaged 4.4, 6.0 and 7.7 percent respectively. The recession which began in earnest during 1982 saw real GNP that year fall below the 1979 level. Faced with falling demand, businesses retrenched by reducing payrolls and restructuring production processes to achieve greater labour efficiency. Unemployment rose to 11.9 percent.

While the economy has begun to expand again since 1982, growth has been much less robust than the levels attained during the late 1960's and early 1970's. Annual GNP increases of 2 to 3 percent during the late 1980's are predicted with unemployment continuing to average 11 percent. Dairy farmers contemplating full-time off-farm work will find the demand for their services significantly reduced from 1966-81 levels. Those considering part-time employment may find slightly more opportunities than in the past with employers seeking to minimize their labour obligations.

In summary both the farm and non-farm sectors of the economy seem unlikely to offer significant adjustment opportunities for physical and human dairy farm resources based on growth or shifting demand patterns. Those wishing to make a change are more likely to be responding to cyclical patterns in cattle and hog markets and derived price effects on feed grains and to periodic opportunities for temporary employment or continuing part-time work.

The foregoing considerations suggest that market incentives to give up dairying during the 1980's will be weaker than during the 1970's and that proportionately fewer of those who do give up will leave farming entirely. A larger proportion of adjusting dairy operators will switch to beef, swine or cereal production based on shortrun market prospects as a means of utilizing physical and human resources which had been allocated to the dairy enterprise.

Two institutional elements have the potential to shift adjustment patterns from their 1970's patterns. The federal budget of May 23, 1985 permits farmers to realize up to $500,000 of capital gains once in a lifetime without payment of tax. This may encourage some dairy farmers to leave farming entirely rather than adjust to other enterprises. The impact of increasing milk quota values is more difficult to predict. The extra wealth created by these increases may permit adjustment out of agriculture with fewer immediate worries concerning off-farm employment or it may provide the capital required to adjust to other farming activities.

LIST OF WORKING PAPERS PUBLISHED IN 1986

No. 1 Exchange Rates and the Canadian Grain Sector. J. Groenewegen. January 1986.

No. 2 Grain Reserve Advance Proposal. Don Adnam. January 1986.

No. 3 Dairy Policy Simulation and Evaluation. Cameron Short. January 1986.

No. 4F Comparaison de l'efficacité prévisionnelle des modèles FARM et ARIMA. Gérald Roy. Mars 1986.

No. 5 Apple Forecasting Model. Julien J. Destorel. August 1985.

No. 6 Agricultural Marketing Legislation in the United States and Western Europe. Pamela Cooper and Brian Davey. April 1986.

No. 7 Structural Change in the Canadian Dairy Farm Sector. Ralph E. Cotterill. April 1986.

Available From:
André Trempe
Services Division
Marketing & Economics Branch
Room 5107
Sir John Carling Bldg.
Ottawa, Ontario
K1A 0C5
(613) 995-5880